Configuring Routers

Router Software Version 11.0
Site Manager Software Version 5.0

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4401 Great America Parkway
Santa Clara, CA 95054

8 Federal Street
Billerica, MA 01821

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Contents

Configuring Routers i

About This Guide

Before You Begin xiii
Conventions xiv
Acronyms xv
Ordering Bay Networks Publications xvi

Technical Support and Online Services

Bay Networks Customer Service xviii
Bay Networks Information Services xix
World Wide Web xix
Customer Service FTP xix
Support Source CD xx
CompuServe xx
InfoFACTS xxi
How to Get Help xxi

Chapter 1
Using the Configuration Manager

Router Configuration Functions 1-1
Adding Network Interfaces 1-1
Customizing Network Interfaces 1-2
Specifying Router Hardware Configuration 1-2
Configuring the Router Connection to the Technician Interface 1-2
Specifying Administrative Information 1-3
Operating Modes 1-4
Local Mode 1-5
Remote Mode 1-6
Dynamic Mode 1-7

Starting a Configuration in Local Mode 1-8
Opening an Existing Configuration File 1-8
Opening a New Configuration File 1-9
Specifying Router Hardware 1-11
Starting a Configuration in Remote Mode 1-12
Starting a Configuration in Dynamic Mode 1-14
Specifying the Router in Dynamic and Remote Modes 1-15
Using the Well-Known Connections Feature 1-18
SNMP SET Error 1-23
Router Connection Messages 1-23

Chapter 2
Adding Network Interfaces

Overview 2-1
Configuring the Circuit 2-3
Enabling Bridging/Routing Services 2-6

Chapter 3
Implementing Configuration Changes

Saving a Configuration File 3-1
Saving a Configuration File in Local Mode 3-1
Saving a Configuration File in Remote Mode 3-3
Saving a Configuration File in Dynamic Mode 3-6
Transferring a Configuration File to the Router 3-7
Choosing a Router 3-8
Examining Filenames on the Router Destination Volume 3-9
Verifying Space on the Destination Volume 3-10
Transferring the Configuration File 3-11
Rebooting a Router with a Configuration File 3-13

Chapter 4
Editing Circuits

Adding Protocols to a Circuit 4-2
Deleting Protocols from a Circuit 4-4
Deleting a Circuit from the Router 4-5
Renaming a Circuit 4-6
Moving a Circuit 4-6

Changing Network Addresses on a Circuit 4-8
Assigning an Additional IP Address to a Circuit 4-8

Chapter 5
Configuring a Connection to the Technician Interface

Chapter 6
Specifying Administrative Information

Appendix A
Modifying Configurations with New Link Modules

Copying the Configuration File A-1
Transferring the Configuration File to a Local Directory A-4
Editing the Configuration File A-5
Transferring the Edited Configuration File to the Router A-9
Rebooting the Router with the Edited Configuration File A-11
Deleting the Old Configuration File from the Router A-12
Renaming the Edited Configuration File to the Default A-12

Index

Figures

Figure 1-1. Bay Networks Site Manager Window 1-3
Figure 1-2. Edit Bridge Global Parameters Window in Local Mode 1-4
Figure 1-3. File Selection Window 1-8
Figure 1-4. Select Router Model Window 1-10
Figure 1-5. Configuration Manager Window 1-10
Figure 1-6. Module List Window 1-12
Figure 1-7. Edit Remote Configuration File Window 1-13
Figure 1-8. Router Hardware Configuration in Configuration Manager Window 1-14
Figure 1-9. Router Connection Options Window 1-16
Figure 1-10. Well-Known Connections Box 1-19
Figure 1-11. Connection List Management Window 1-20
Figure 1-12. Connections List Options Window 1-21
Figure 2-1. Add Circuit Window 2-3
Figure 2-2. WAN Protocols Window 2-5
Figure 2-3. Select Protocols Window 2-7
Figure 3-1. Save Configuration File Window 3-2
Figure 3-2. File Saved Window 3-2
Figure 3-3. Router Files Manager Window 3-4
Figure 3-4. Compact Confirmation WIndow 3-4
Figure 3-5. Save Configuration File Window 3-5
Figure 3-6. File Saved Pop-up Window 3-5
Figure 3-7. Save Configuration File Window 3-7
Figure 3-8. Router Connection Options Window 3-9
Figure 3-9. Router Files Manager Window 3-10
Figure 3-10. TFTP Put File Selection Window 3-11
Figure 3-11. Boot Router Window 3-13
Figure 4-1. Circuit List Window 4-2
Figure 4-2. Circuit Definition Window 4-3
Figure 4-3. Select Protocols Window 4-4

Figure 4-4. Delete Circuit Window 4-5
Figure 4-5. Moving a Circuit 4-7
Figure 4-6. IP Interfaces Window 4-9
Figure 4-7. IP Configuration Window 4-10
Figure 5-1. Console Button 5-1
Figure 5-2. Console Lists Window 5-2
Figure 6-1. Edit System Description Parameters Window 6-1
Figure A-1. Router Files Manager Window A-2
Figure A-2. Copy File Window Source Filename A-3
Figure A-3. Copy File Window Destination Filename A-3
Figure A-4. Copy Confirmation Window A-3
Figure A-5. TFTP Get Files Window A-4
Figure A-6. File Selection Window A-5
Figure A-7. Configuration Manager Window A-6
Figure A-8. Circuit List Window A-7
Figure A-9. Delete Circuit Window A-7
Figure A-10. Module List Window A-8
Figure A-11. Confirming a Circuit Delete Request A-8
Figure A-12. File Save Confirmation Window A-9
Figure A-13. TFTP Put File Selection Window A-10
Figure A-14. Boot Router Window A-11

Tables

Table 1-1. Options in Connection List Management Window 1-20
Table 1-2. Connections List Options 1-22
Table 2-1. Circuit-type Designators in Default Circuit Names 2-4
Table 2-2. Synchronous Line Parameters 2-5
Table 2-3. Related Protocol Documentation 2-8

About This Guide

If you are responsible for configuring and managing Bay Networks™ routers, you need to read this guide. This guide provides an overview of the Configuration Manager, and instructions about

- Starting up a router configuration file
- Configuring the router's connection to the Technician Interface console
- Specifying administrative information
- Implementing configurations created in local or remote mode, and saving dynamically made changes to a configuration file
- Using the Configuration Change utility
- Configuring a router with a new link module or net module

Before You Begin

Before using this guide, you must complete the following procedures. For a new router:

- Install the router (refer to the installation manual that came with your router).
- Connect the router to the network and create a pilot configuration file (refer to *Quick-Starting Routers and BNX Platforms*, *Connecting BayStack AN and ANH Systems to a Network*, or *Connecting ASN Routers and BNX Platforms to a Network)*.

Make sure that you are running the latest version of Bay Networks Site Manager and router software. For instructions, refer to *Upgrading Routers from Version 7-10.xx to Version 11.0*.

Conventions

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: if command syntax is **ping** *<ip_address>*, you enter **ping 192.32.10.12**
bold text	Indicates text that you need to enter, command names, and buttons in menu paths. Example: Enter **wfsm &**
	Example: Use the **dinfo** command.
	Example: ATM DXI > Interfaces > **PVCs** identifies the PVCs button in the window that appears when you select the Interfaces option from the ATM DXI menu.
brackets ([ ])	Indicate optional elements. You can choose none, one, or all of the options.
italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.
`screen text`	Indicates data that appears on the screen. Example: `Set Bay Networks Trap Monitor Filters`
separator (>)	Separates menu and option names in instructions and internal pin-to-pin wire connections. Example: Protocols > AppleTalk identifies the AppleTalk option in the Protocols menu.
	Example: Pin 7 > 19 > 20
vertical line (|)	Indicates that you enter only one of the parts of the command. The vertical line separates choices. Do not type the vertical line when entering the command. Example: If the command syntax is
	show at routes | **nets**, you enter either **show at routes** or **show at nets**, but not both.

Acronyms

AN	Access Node
APPN	Advanced Peer-to-Peer Networking
ARP	Address Resolution Protocol
ASN	Access Stack Node
AT	AppleTalk Protocol
ATM	Asynchronous Transfer Mode
BGP	Border Gateway Protocol
BOFL	Breath of Life message
BOOTP	Bootstrap Protocol
DDP	Datagram Delivery Protocol
DLS	Data Link Switching
EGP	Exterior Gateway Protocol
FR	Frame Relay protocol
IP	Internet Protocol
IPX	Internet Packet Exchange (Novell)
LLC	Logical Link Control
NCP	Network Control Protocol
NVFS	non-volatile file system
OSPF	Open Shortest Path First
PPP	Point-to-Point Protocol
RARP	Reverse Address Resolution Protocol
RIF	Routing Information Field
RIP	Routing Information Protocol
SMDS	Switched Multimegabit Data Services
SNMP	Simple Network Management Protocol
SR	Source Routing Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TFTP	Trivial File Transfer Protocol
VINES	Virtual Networking System (Banyan)

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Latin America	(407) 997-1713	(407) 997-1714

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Chapter 1
Using the Configuration Manager

This chapter provides an overview of the Configuration Manager. It also describes the router configuration functions you can perform using this tool, explains the three operating modes (local, remote, and dynamic), and how to start and operate the Configuration Manager in each mode.

Note: If you are configuring an Access Node (AN™) or an Access Stack Node (ASN™) for the first time, you must read *Connecting BayStack AN and ANH Systems to a Network* or *Connecting ASN Routers and BNX Platforms to a Network* before you continue. Those manuals explain the special considerations for configuring and booting ANs and ASNs.

Router Configuration Functions

The Configuration Manager provides remote router configuration functions. Specifically, it lets you

- Add network interfaces to the router based on defaults.
- Customize network interfaces for your network environment.
- Specify the router's hardware configuration.
- Configure the router's connection to the Technician Interface.
- Specify administrative information about the router.

Adding Network Interfaces

The Configuration Manager simplifies router configuration by providing default values for most of the parameters required to configure an interface. Chapter 2 describes how to add network interfaces.

Customizing Network Interfaces

After you add an interface to a router, you can use the Configuration Manager to customize it. The Configuration Manager provides management access to all parameters associated with an interface. These parameters consist of the physical-layer (line) parameters, datalink-layer (circuit) parameters, and network-layer (bridging/routing) parameters. You can perform the following functions:

- Edit the line parameters associated with the interface. *Configuring Line Services* describes how to edit line parameters.
- Delete and rename circuits, as well as move a circuit to another interface. Chapter 4 describes how to perform these tasks.
- Add protocols to and delete them from the circuit associated with the interface. Chapter 4 describes how to perform these tasks.
- Edit bridging and routing protocol parameters.

  You can access these parameters on a system-wide or interface-specific basis. Refer to the appropriate protocol-specific guide for instructions on editing bridging and routing protocol parameters.
- Add multiple Internet Protocol (IP) addresses to a single circuit that supports IP. Chapter 4 describes how to do this.

Specifying Router Hardware Configuration

In dynamic and remote modes, the Configuration Manager does not require you to specify router hardware. In local mode, however, the Configuration Manager requires you to specify the hardware configuration whenever you create a new configuration file.

See “Starting a Configuration in Local Mode” later in this chapter for information on how to specify router hardware.

Configuring the Router Connection to the Technician Interface

The router’s console port connects the router to the Technician Interface. Site Manager provides default settings for the console configuration; however, you can use the Configuration Manager to access and reconfigure all console parameters.

Chapter 5 describes how to configure the router's connection to the Technician Interface.

Specifying Administrative Information

You can use the Configuration Manager to specify a system name, a system contact, and a system location for the router. This information appears in the main Site Manager window (Figure 1-1), which appears at Site Manager start-up.

Chapter 6 describes how to specify administrative information.

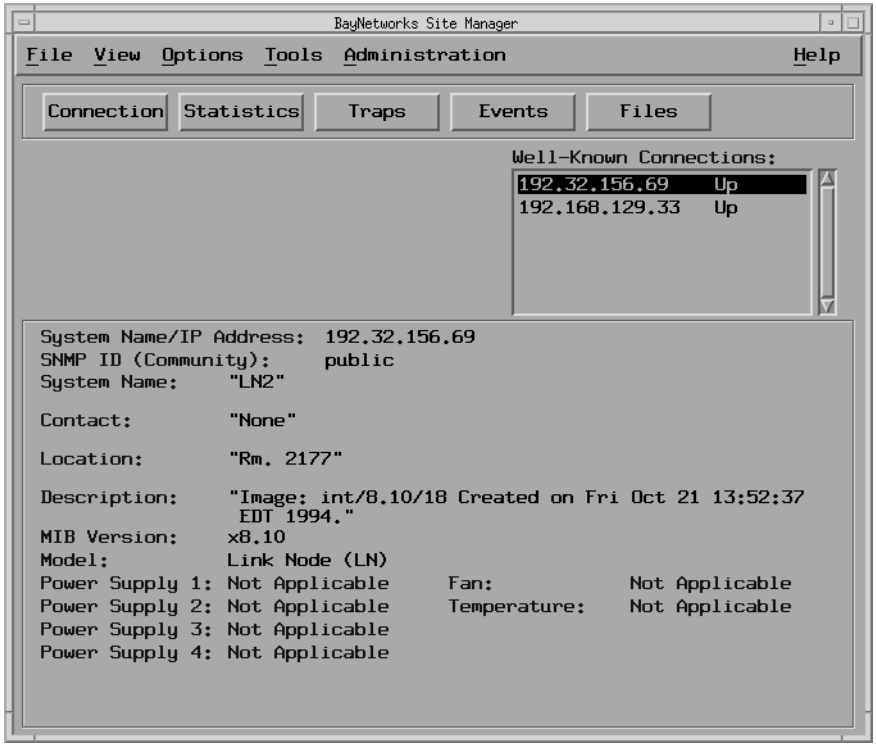
BayNetworks Site Manager
File View Options Tools Administration Help
Connection Statistics Traps Events Files
Well-Known Connections:
192.32.156.69 Up
192.168.129.33 Up
System Name/IP Address: 192.32.156.69
SNMP ID (Community): public
System Name: "LN2"
Contact: "None"
Location: "Rm. 2177"
Description: "Image: int/8.10/18 Created on Fri Oct 21 13:52:37 EDT 1994."
MIB Version: x8.10
Model: Link Node (LN)
Power Supply 1: Not Applicable
Fan: Not Applicable
Power Supply 2: Not Applicable
Temperature: Not Applicable
Power Supply 3: Not Applicable
Power Supply 4: Not Applicable

Figure 1-1. Bay Networks Site Manager Window

Operating Modes

You can perform all configuration functions in one of three modes:

- Local
- Remote
- Dynamic

For each function you can perform, the Configuration Manager displays the same windows in the same sequence regardless of the operating mode. For example, the Configuration Manager displays the same sequence of windows when you configure the Bridge global parameters in local mode as it displays when you configure them in dynamic mode.

The Configuration Mode field in the upper-left corner of each window identifies the Configuration Manager's current operating mode. For example, Figure 1-2 shows the Edit Bridge Global Parameters window when the Configuration Manager is running in local mode.

Figure 1-2. Edit Bridge Global Parameters Window in Local Mode

The following sections describe each operating mode.

Local Mode

Use local mode to create or edit a configuration file locally on the Site Manager workstation for later implementation on the router. Unlike remote and dynamic modes, local mode does not access a router or automatically display the router's hardware configuration. You enter the router's hardware configuration when you create a new configuration file or edit a file with hardware changes.

To configure a router in local mode, you must

- Open a configuration file. You can create a new configuration file or open an existing one.
- Specify the router's hardware configuration.
- Use the Configuration Manager to perform all desired router configuration functions (adding and configuring interfaces, and so forth) as described in subsequent chapters.
- Save the configuration file to the Site Manager workstation. See Chapter 3 for more information.
- Implement the changes. To implement your configuration, you must
  - -- Use the Router Files Manager to select TFTP to transfer the configuration file to the router.
  - -- Use Site Manager to reboot the router with the configuration file.

  Chapter 3 describes how to implement the configuration changes.

See "Starting a Configuration in Local Mode" later in this chapter for information on how to begin configuring the router in local mode.

Remote Mode

Use remote mode if you can access the router over the network, but want to implement the configuration at a later date.

To configure a router in remote mode, you must

- Configure the router connection options that identify the router you want to configure and that provide Site Manager with an SNMP community that has read/write access to the router.

  After you specify the router connection options and select the remote operating mode, the Configuration Manager uses SNMP GETs to retrieve and display the router's hardware configuration in the Configuration Manager window. Optionally, if you specify a configuration file stored in the router's file system, the Configuration Manager uses TFTP to automatically retrieve that file for local editing.

- Use the Configuration Manager to perform all desired router configuration functions (adding interfaces, and so forth), as described in subsequent chapters.

- Save the configuration file to the Site Manager workstation. When you save an updated configuration file in remote mode, the Configuration Manager automatically uses TFTP to send the file to the router. See Chapter 3 for more information.

- Implement the changes. To implement your configuration, you must use Site Manager to reboot the router with the configuration file. See Chapter 3 for more information.

See the section "Starting a Configuration in Remote Mode" later in this chapter for information on how to begin configuring the router in remote mode.

Dynamic Mode

You use dynamic mode if you can access the router over the network and want to configure the system in real time.

To run the Configuration Manager in dynamic mode, you must

- Configure SNMP options that identify the router you want to configure and that provide Site Manager with an SNMP community that has read-write access to the router.
- Use the Configuration Manager to perform all desired router configuration functions (adding interfaces, and so forth), as described in subsequent chapters.
- Save the configuration file to the router's file system if you want to maintain a record of the changes you made. Refer to Chapter 3.

See the section "Starting a Configuration in Dynamic Mode" later in this chapter for information on how to begin configuring the router in dynamic mode.

Note: You should not use dynamic mode to create an entirely new router configuration file. Instead, use dynamic mode to make minor changes to an existing configuration. It is safer to create a configuration and make major changes using local or remote mode, since it is easier in these modes to correct mistakes or redo a configuration.

Also, configuring a router in dynamic mode can interrupt service, depending on the attributes you modify. Be careful when modifying the global attributes of protocols. For example, changing the size of the bridge forwarding table will flush and recreate the table, which can briefly affect performance.

Starting a Configuration in Local Mode

To begin configuring in local mode, select Tools > Configuration Manager > Local File from the main Site Manager window.

The File Selection window appears (Figure 1-3).

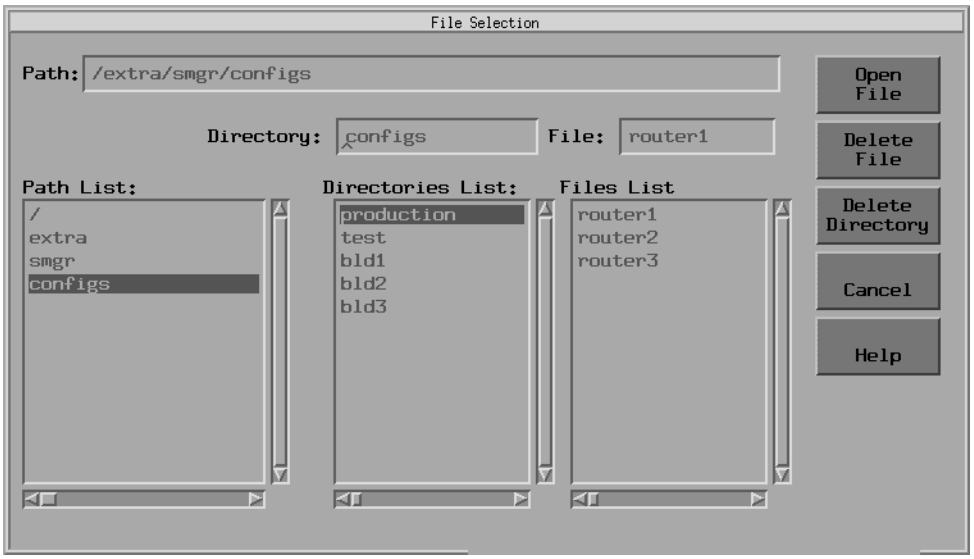

Figure 1-3. File Selection Window

The way that you proceed depends on whether you open an existing or new configuration file, as described in the following sections.

Opening an Existing Configuration File

To open an existing file, select it and click on Open File.

You can specify the file you want to open in either of the following ways:

- Click on the Path List, Directories List, and File List. The Path List shows the path from the root directory to the current directory. Select from the Path List to move up a directory level. The Directories List shows the directories available from the current directory. Select from the Directories List to move down a directory level. The Files List shows files available from the current directory. Your current selections appear in the Path, Directory, and File boxes at the top of the window.
- Click on the appropriate box (Path, Directory, or File) and type a path, directory, or file.

Once you select a file and click on Open File, the Configuration Manager window displays a logical image of the rear panel associated with the router you selected. (Figure 1-5 shows the Configuration Manager window as it appears if you have not already specified the router hardware.) At this point, you should specify the router's hardware configuration if you haven't already done so. Proceed to the section "Specifying Router Hardware."

Opening a New Configuration File

To open a new file, enter the name in the File box and click on Open File.

Another way to create a file is to enter its name in the Path box at the top of the window and press Enter. To specify a new directory, enter its name in the Path or Directory box and press Enter.

You must have write-access privileges to the directory where you want to create a configuration file.

After you open a new file, the Select Router Model window displays the Bay Networks router models (Figure 1-4).

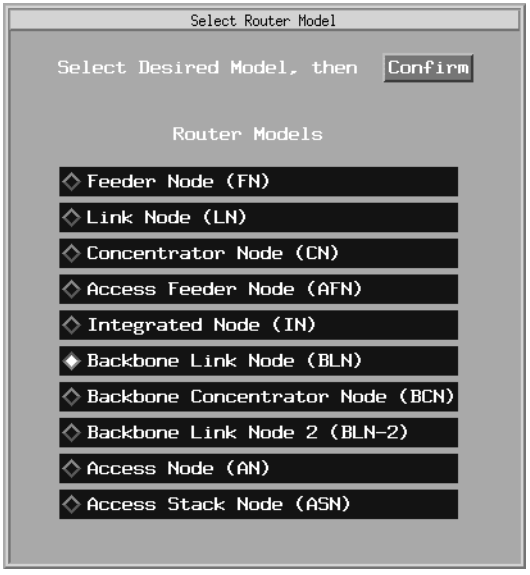

Figure 1-4. Select Router Model Window

Select the appropriate router model, and then click on Confirm. The Configuration Manager window displays the logical image of the rear panel associated with that router model (Figure 1-5).

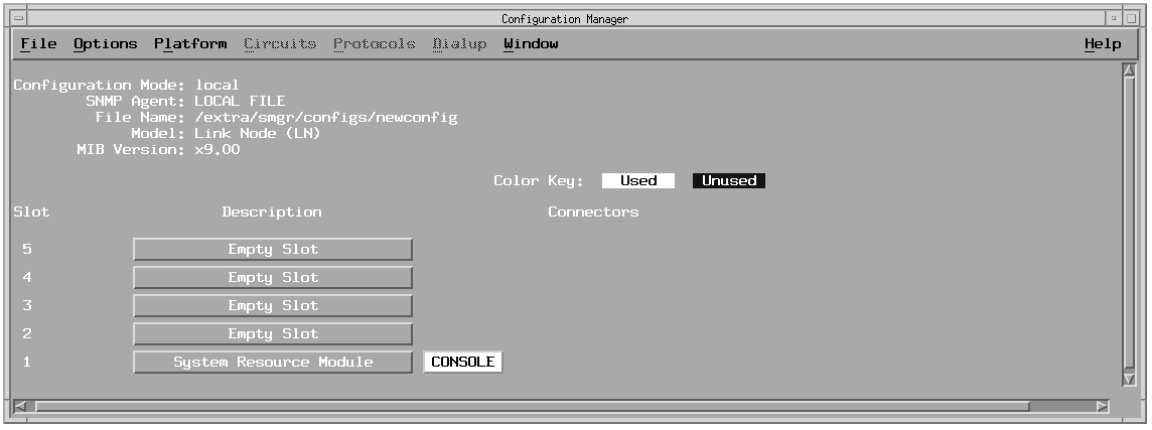

Figure 1-5. Configuration Manager Window

You must now specify the router's hardware configuration.

Specifying Router Hardware

You specify the router hardware in local mode only. You can add hardware to empty slots and change the hardware in occupied slots. The procedure for both is the same.

Note: When you change hardware in a slot containing configured circuits, the Configuration Manager automatically deletes the circuits.

To specify hardware from the Configuration Manager window (Figure 1-5), follow these steps:

1. **Under Description, click on the slot for which you want to specify hardware.**

   The Configuration Manager displays the Module List window (Figure 1-6), which lists link modules and their corresponding model numbers.

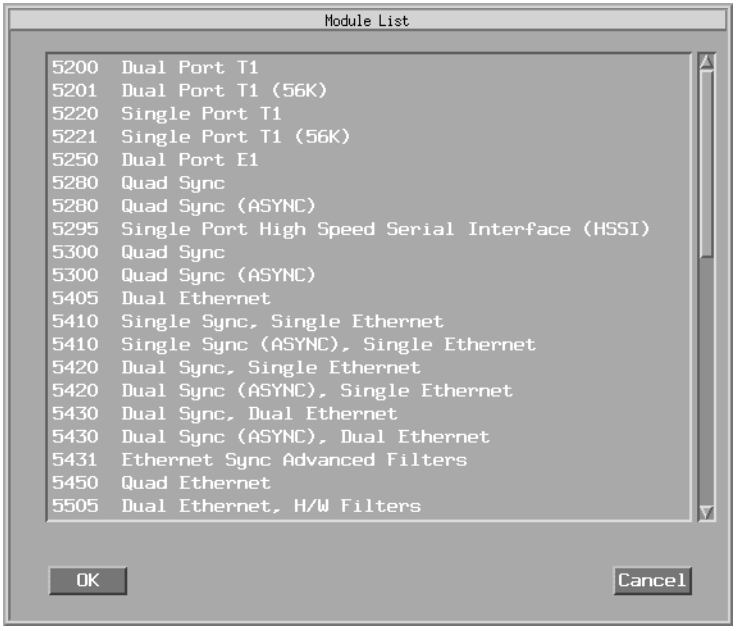
Module List
5200 Dual Port T1
5201 Dual Port T1 (56K)
5220 Single Port T1
5221 Single Port T1 (56K)
5250 Dual Port E1
5280 Quad Sync
5280 Quad Sync (ASYNC)
5295 Single Port High Speed Serial Interface (HSSI)
5300 Quad Sync
5300 Quad Sync (ASYNC)
5405 Dual Ethernet
5410 Single Sync, Single Ethernet
5410 Single Sync (ASYNC), Single Ethernet
5420 Dual Sync, Single Ethernet
5420 Dual Sync (ASYNC), Single Ethernet
5430 Dual Sync, Dual Ethernet
5430 Dual Sync (ASYNC), Dual Ethernet
5431 Ethernet Sync Advanced Filters
5450 Quad Ethernet
5505 Dual Ethernet, H/W Filters
OK
Cancel

Figure 1-6. Module List Window

2. **Click on the link module you want to insert in the slot.**

   If the link module is hidden, drag the scroll bar to display it in the window.

3. **Click on OK.**

   The Configuration Manager window reappears, displaying the link module you just selected in the slot. You can now perform the desired router configuration functions, as described in Chapter 2.

Starting a Configuration in Remote Mode

To perform remote configuration, complete the following steps:

1. **Specify the router you want to configure.**

   See “Specifying the Router in Dynamic and Remote Modes” later in this chapter.

2. **Select Tools > Configuration Manager > Remote File in the main Site Manager window.**

The Edit Remote Configuration File window appears (Figure 1-7).

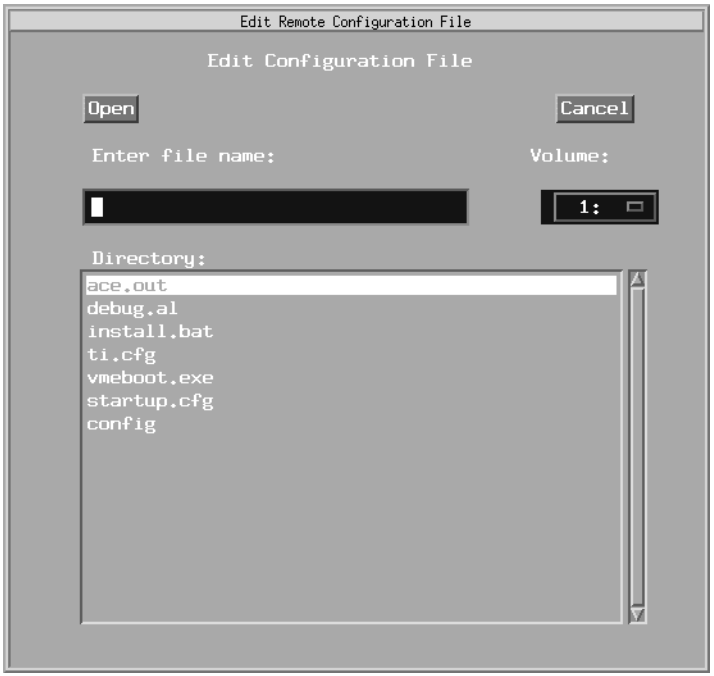

Figure 1-7. Edit Remote Configuration File Window

3. **To retrieve a file from the router for local editing, complete these steps:**

   a. **Select the volume (or slot) containing the configuration file.**

      Click on the Volume box to display the available volumes and select a volume.

      The directory of the chosen volume appears in the Directory box.

   b. **Either type the filename in the Enter file name box or click on the filename in the Directory box.**

   c. **Click on Open.**

The Configuration Manager uses TFTP to retrieve and display the specified file in the Configuration Manager window; the filename appears in the upper-left corner of the window. If the file does not exist, the Configuration Manager window displays the hardware configuration and no circuits.

In Figure 1-8, the configuration file contains information for the connectors in Slots 2, 3, and 4.

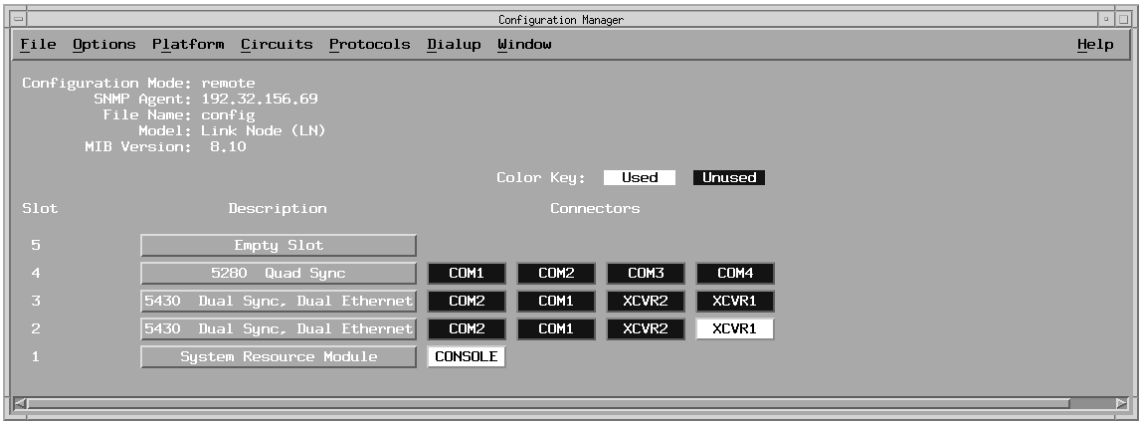
Configuration Manager
File Options Platform Circuits Protocols Dialup Window Help
Configuration Mode: remote
SNMP Agent: 192.32.156.69
File Name: config
Model: Link Node (LN)
MIB Version: 8.10
Color Key: Used Unused
Slot Description Connectors
5 Empty Slot
4 5280 Quad Sync COM1 COM2 COM3 COM4
3 5430 Dual Sync, Dual Ethernet COM2 COM1 XCVR2 XCVR1
2 5430 Dual Sync, Dual Ethernet COM2 COM1 XCVR2 XCVR1
1 System Resource Module CONSOLE

Figure 1-8. Router Hardware Configuration in Configuration Manager Window

At this point, you can use the Configuration Manager to perform all desired router configuration functions (adding interfaces, and so forth). Proceed to Chapter 2 for more information.

Starting a Configuration in Dynamic Mode

To perform dynamic configuration, complete the following steps:

1. **Specify the router you want to configure.**

   Refer to “Specifying the Router in Dynamic and Remote Modes” later in this chapter.

2. **Select Tools > Configuration Manager > Dynamic in the Bay Networks Site Manager window.**

   If you used the Technician Interface to set the router to secure mode during the Quick-Start procedure, you will now be prompted for a password. Enter the encryption key that you used when you set this router to secure mode.

   The Configuration Manager window appears, displaying the real-time router hardware and software configuration.

Note: If you upgrade your router software (for example, from Version 10.*xx* to 11.0), and then view the configuration file in dynamic mode, the file's MIB stamp will not match the revision of the upgraded software. Once you dynamically edit and save the configuration file (using either Site Manager or the Technician Interface), the router software updates the file's MIB stamp to match the newer software.

You can now use the Configuration Manager to perform all desired router configuration functions (adding interfaces, and so forth). Proceed to Chapter 2 for more information.

Specifying the Router in Dynamic and Remote Modes

To run the Configuration Manager in dynamic or remote mode, you must first specify the router you want to configure. You can specify the router in the following ways:

- If you have connected to this router before, use the well-known connections feature described in the next section.
- Display the Router Connection Options window (Figure 1-9) in either of the following ways:
  - -- Click on the Connection button in the Bay Networks Site Manager window.
  - -- Select Options > Router Connection in the Bay Networks Site Manager window.

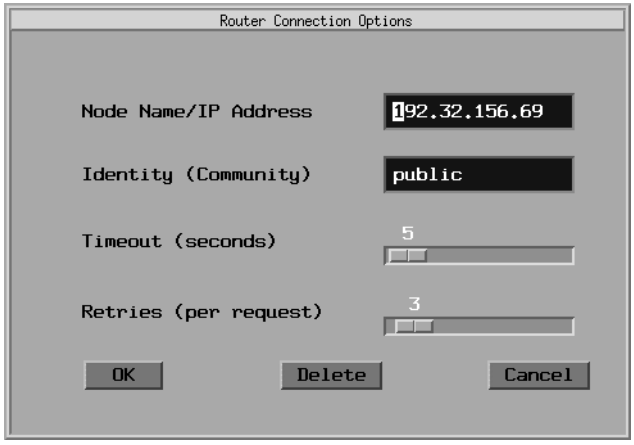

Figure 1-9. Router Connection Options Window

To connect to the router using the Router Connection Options window, follow these steps:

1. **Edit the parameters in the window, using the descriptions that follow as a guide.**

   You can click on Delete to delete the currently displayed connection.

2. **Click on OK.**

Note: Each instance of the Configuration Manager tool allows you access to one router only. To configure two routers simultaneously, first connect to one router and bring up the Configuration Manager. Then display the Router Connection Options window again, specify the second router, and run another instance of the Configuration Manager tool, which automatically communicates with the router.

Parameter:	**Node Name/IP Address**
Default:	None
Options:	Valid host name or valid IP address
Function:	Specifies the host name or IP address of the Bay Networks router with which you want to establish a management session.
Instructions:	Enter the router's IP address or host name. You can use the host name to establish a management session only if it is included in the workstation's host file.
MIB Object ID:	Not Applicable

Parameter:	**Identity (Community)**
Default:	Public
Options:	Any valid SNMP community name
Function:	Specifies the SNMP community name you want Site Manager to use when communicating with the router.
Instructions:	Enter the SNMP community name. The community must have read-write access to the specified router if you want to use the Configuration Manager to reconfigure the router.
MIB Object ID:	Not Applicable

Parameter:	**Timeout (seconds)**
Default:	10 seconds
Range:	1 to 300 seconds
Function:	Specifies the number of seconds Site Manager waits for a response from the router after it issues an SNMP SET or GET before reissuing the command.
Instructions:	Enter the number of seconds.
MIB Object ID:	Not Applicable

Parameter:	**Retries (per request)**
Default:	2 attempts
Range:	1 to 32 attempts
Function:	Specifies the number of times Site Manager will reissue a command when the router does not respond.
Instructions:	Enter the number of times.
MIB Object ID:	Not Applicable

Using the Well-Known Connections Feature

The main Bay Networks Site Manager window displays a scroll box entitled Well-Known Connections (Figure 1-10). This scroll box lists the IP addresses of routers you have connected to with this version of Site Manager. Click on the IP address in the box to connect to the router.

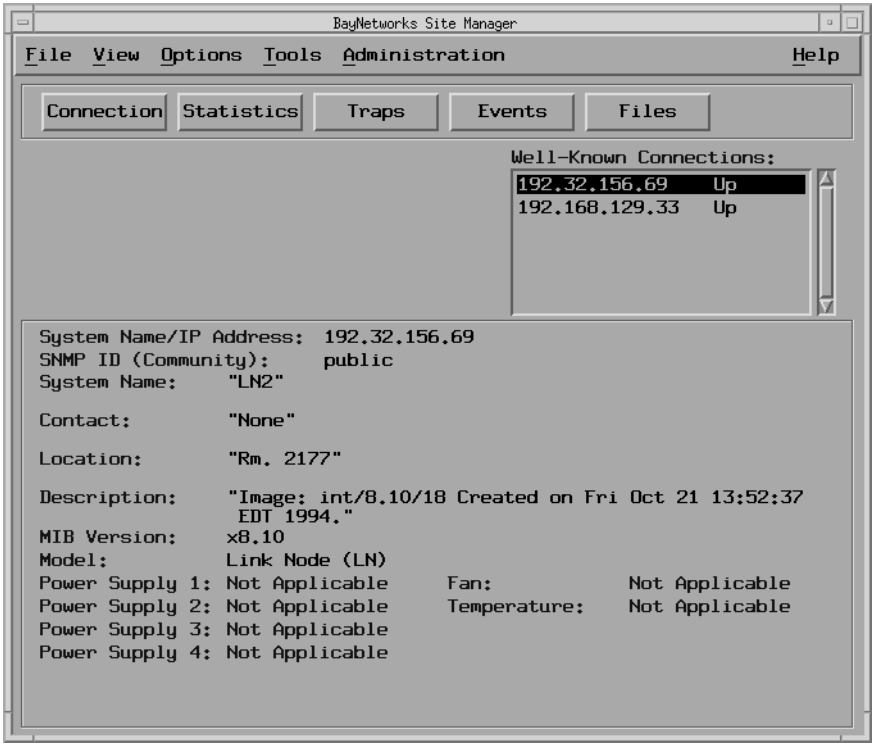
BayNetworks Site Manager
File View Options Tools Administration Help
Connection Statistics Traps Events Files
Well-Known Connections:
192.32.156.69 Up
192.168.129.33 Up
System Name/IP Address: 192.32.156.69
SNMP ID (Community): public
System Name: "LN2"
Contact: "None"
Location: "Rm. 2177"
Description: "Image: int/8.10/18 Created on Fri Oct 21 13:52:37 EDT 1994."
MIB Version: x8.10
Model: Link Node (LN)
Power Supply 1: Not Applicable
Power Supply 2: Not Applicable
Power Supply 3: Not Applicable
Power Supply 4: Not Applicable
Fan: Not Applicable
Temperature: Not Applicable

Figure 1-10. Well-Known Connections Box

Site Manager lists the IP connections in order of the most recent connection. Every time you make a new connection using the Connection button on the Bay Networks Site Manager window (Figure 1-10) or using the Options > Connection menu, Site Manager automatically adds a new IP address to the list.

The status of the accessibility of the connection to the router is polled at a sample rate you can define. The Well-Known Connections box lists the results of the poll next to the IP address, as Up, Down, or Ignore.

If you click on an IP address with a Down status, the Connection List Management window (Figure 1-11) appears.

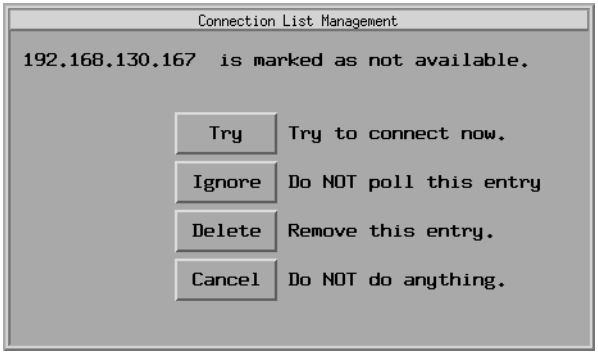

Figure 1-11. Connection List Management Window

Table 1-1 describes the options in the Connection List Management window.

Table 1-1. Options in Connection List Management Window

Option	Function
Try	Polls the accessibility of the connection to the router again, and tries to connect to the router
Ignore	Does not poll the address again
Delete	Removes the address from the list in the Well-Known Connections box
Cancel	Returns to the prior window without changing anything

Click on the option you want for this connection. The Site Manager window appears.

Choose Options > Connections List from the Site Manager window to display the Connections List Options window (Figure 1-12). Set the options you want in the Well-Known Connections box.

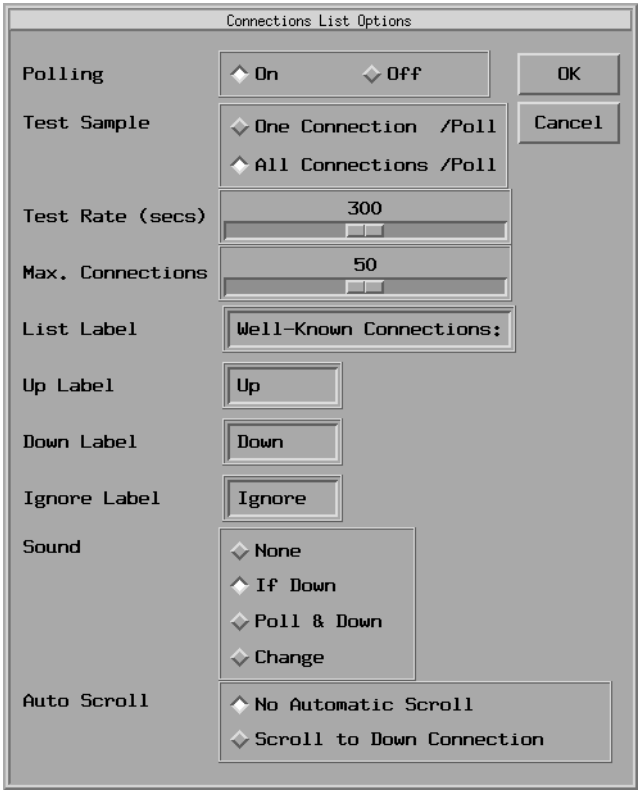

Figure 1-12. Connections List Options Window

Table 1-2 describes the options in the Connections List Options window.

Table 1-2. Connections List Options

Option	Function
Polling	Enables or disables the accessibility testing of the IP addresses. If you set this option to On, Site Manager polls the IP addresses in the Well-Known Connections box to test whether the connections are still accessible.
Test Sample	Tests one connection or all connections per poll. If you select One Connection, each poll tests one connection on the list in sequential order.
Test Rate (secs)	Specifies how frequently to poll the IP addresses to test the validity of the connections. The default is 300 seconds.
Max. Connections	Sets a maximum number of IP connections to display in the Well-Known Connections box. Valid entries are 1 to 100. If the entry is less than the number of connections currently in the box, Site Manager truncates the list from the bottom.
List Label	Lets you change the label (or name) of the Well-Known Connections box.
Up Label	Lets you change the label indicating the status of an accessible IP address in the Well-Known Connections box.
Down Label	Lets you change the label indicating the status of an inaccessible IP address in the Well-Known Connections box.
Ignore Label	Lets you change the label indicating the status of connections to be ignored in the Well-Known Connections box. Site Manager does not poll ignored connections.
Sound	Specifies when (if at all) the Well-Known Connections box generates a sound. The box can generate a sound when • A connection is down (the default). • Polling occurs (one beep) and polling shows that a connection is down (one beep per down connection). • There is a change in status.
Auto Scroll	Lets you specify whether you want an automatic scroll to a down connection in the Well-Known Connections box.

When you have completed your edits in the Connections List Option window, click on OK to implement them.

SNMP SET Error

On occasion you may receive a SET error when you try to sign on to a router in dynamic mode. SET errors lock you out of the router for a period of time. A common cause is another person using a router you are attempting to configure. The system displays the one of the following:

- `SNMP General Set Error! Machine is currently locked by Manager (IP Address)`
- `SNMP set error`

When a SET error occurs, wait several minutes and try again. There is a default lock-out time of 2 minutes when a SET error occurs.

See *Managing Routers and BNX Platforms* for more information on SNMP SET errors.

Router Connection Messages

Site Manager supports three error messages that

- Explain why a router connection attempt failed.
- Provide information on any adjustments you may need to make in the router connection parameters.

Any of these messages can appear in a pop-up message box in response to a failed connection attempt. The following are the three error messages and a description of the failure condition that corresponds to each message:

- `Connection failed, SNMP agent not responding. Check IP address and Community. Timeout and Retries may also need to be increased.`

  The router at the specified IP address did not respond to the connection attempt from your Site Manager workstation.

- `WARNING: Site Manager no longer supports the version of software that the router is running. Proceed with caution.`

  The router at the specified IP address is using a MIB version that is older than the MIB versions that your Site Manager workstation supports. (There is a backward compatibility problem.)

- `WARNING: Site Manager has discovered a forward compatibility situation with the router software. It is recommended that Site Manager be upgraded in order to manage this router properly. Proceed with caution.`

  The router at the specified address is using a MIB version that is newer than the MIB versions that your Site Manager workstation supports. (There is a forward compatibility problem.)

Chapter 2
Adding Network Interfaces

This chapter describes how to use the Configuration Manager to add network interfaces based on router defaults.

Defaults are suitable for most networks; however, the Configuration Manager lets you change (or customize) these settings after you add the interface. Bay Networks offers protocol-specific manuals that provide instructions for configuring network interfaces; refer to these manuals as necessary.

This chapter assumes that you are familiar with the Configuration Manager's three operating modes and that the Configuration Manager tool is running on your workstation. Refer to Chapter 1 for information on the three operating modes and for instructions on starting the Configuration Manager tool.

Note: If you are configuring an Access Node (AN) or an Access Stack Node (ASN) for the first time, you must read *Connecting BayStack AN and ANH Systems to a Network* or *Connecting ASN Routers and BNX Platforms* to a Network before you continue. Those manuals explain the special considerations for configuring and booting ANs and ASNs.

Overview

Depending on the type of network interface you want to add, the Configuration Manager requires you to specify a limited number of WAN and bridging/routing protocol parameters. It then provides default settings for the remaining parameters required to configure the interface.

To add a network interface, you must do the following:

1. **Configure the circuit.**

2. Enable bridging/routing protocols on the circuit.

To configure the circuit, you specify the router's physical network connection by clicking on a graphic of the appropriate connector. With the exception of MCT1 and MCE1, the Configuration Manager automatically sets all physical-layer (or the line) parameters with default values for that type of connector. For all local area network (LAN) connectors, the Configuration Manager also automatically configures the datalink-layer connection, called a LAN circuit.

If the connector requires a WAN connection, the Configuration Manager displays a pop-up menu from which you select the appropriate WAN protocol. If you select the ATM DXI, X.25, or Switched Multimegabit Data Service (SMDS) protocol, the Configuration Manager also requires you to set some WAN-protocol-specific parameters.

To enable bridging/routing protocols on the circuit, you select the desired protocols from a pop-up menu that the Configuration Manager displays once the circuit is configured. The application then displays protocol-specific pop-up windows that prompt you to specify certain parameter values.

The Configuration Manager provides default values for the remaining parameters needed to enable the selected bridging/routing protocols on that circuit. Once you have enabled bridging/routing protocols on a circuit, you have configured a network interface.

The following sections give step-by-step instructions for configuring the circuit and enabling bridging/routing protocols on the circuit.

Configuring the Circuit

Note: Refer to *Configuring Line Services* for instructions on adding MCT1 or MCE1 circuits.

To configure a circuit, begin at the Configuration Manager window, and complete the following steps:

1. **Click on the link module connector you want to connect to the network.**

   The Add Circuit window appears (Figure 2-1).

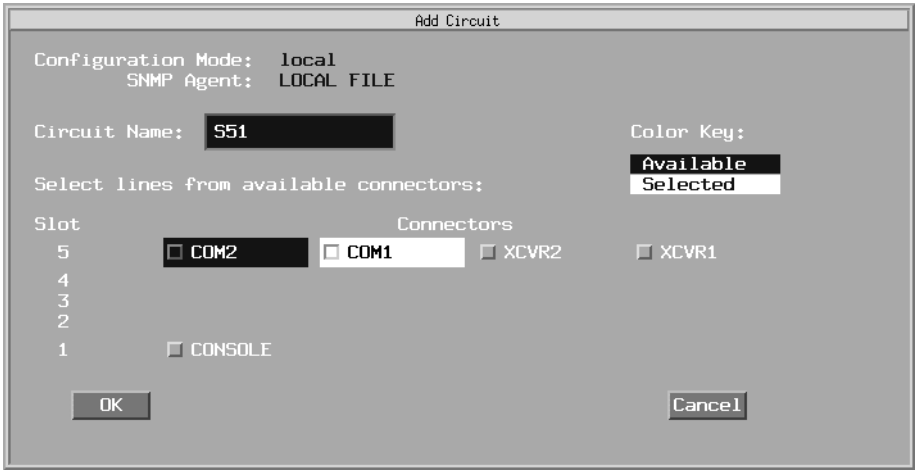

Figure 2-1. Add Circuit Window

A default circuit name appears in the Circuit Name box. The default circuit name consists of a circuit type designator (Table 2-1) followed by two sets of numbers that identify the circuit location (the first number is between 1 and 14 and identifies the router slot; the second number is between 1 and 8 and identifies the specific connector in that slot).

For example, the circuit name S51 in Figure 2-1 identifies a synchronous circuit in Slot 5 on Communications Port 1.

Table 2-1. Circuit-type Designators in Default Circuit Names

Letter Designator	Connector Type
E	Ethernet
E1	E1
F	FDDI
H	HSSI
MCE1	MCE1
MCT1	MCT1
O	Token Ring
S	Synchronous
T1	T1

Note: Follow the default circuit-naming convention to consistently represent circuit types and locations. You can, however, assign any circuit name containing up to 15 characters (alphabetical, numerical, underline, or slash) without spaces. Circuit names are case sensitive.

2. **Click on OK.**

   If the connector supports hardware filters, a pop-up window prompts: `Do you want to enable Hardware Filters on this circuit?` Click on OK to enable hardware filters. Otherwise, click on Cancel to exit the window.

   -- If the connector requires a LAN circuit, the Select Protocols window appears. Go to the "Enabling Bridging/Routing Services" section for instructions.

   -- If the connector is an ISDN connector (such as ISDN1), a dialog box appears, telling you that you can only configure ISDN from the Dialup pull-down menu. For information on configuring ISDN services, refer to *Configuring Dial Services.*

   -- If the connector requires a WAN circuit, the WAN Protocols window appears (Figure 2-2).

Figure 2-2. WAN Protocols Window

3. **Select the WAN protocol you want to enable on the circuit and click on OK.**

   When you select a WAN protocol, note that

   -- Selecting Frame Relay, PPP, or SMDS automatically enables protocol prioritization. For information on protocol prioritization, refer to *Configuring Traffic Filters and Protocol Prioritization.*

   -- Once you select Standard, you cannot change the WAN protocol on this circuit to any of the other protocols. If you later want to enable any other protocol on this circuit, you must delete the circuit and start over. For instructions on deleting a circuit from the router, refer to Chapter 4.

When you enable a WAN protocol on the circuit, the synchronous line parameters are automatically set, as Table 2-2 shows.

Table 2-2. Synchronous Line Parameters

Parameter	Setting
BOLF	Disable
Promiscuous	Enable
Service	Transparent
WAN Protocol	Chosen WAN protocol

See *Configuring Line Services* for more information.

-- If you are configuring an AN or ASN router, an ASYNC option appears in the WAN Protocols window (Figure 2-2). See *Configuring Line Services* for more information on editing the ASYNC parameters.

If you selected the Standard, PassThru, PPP, or Frame Relay WAN protocol, the Configuration Manager displays the Select Protocols window. Go directly to the "Enabling Bridging/Routing Services" section for instructions.

If you selected another WAN protocol, you must specify a few additional parameters before proceeding to the "Enabling Bridging/Routing Services" section. Depending on the WAN protocol you selected (ATM DXI, ATM FRE2, SMDS, SDLC, or X.25), you must refer to one of the following manuals for instructions on enabling the protocol:

- If you selected ATM DXI or ATM FRE2, refer to *Configuring ATM DXI Services* or *Configuring ATM Services*, respectively.
- If you selected SMDS, refer to *Configuring SMDS*.
- If you selected SDLC, refer to *Configuring SDLC Services*.
- If you selected X.25, refer to *Configuring X.25 Services*.

Enabling Bridging/Routing Services

Once a circuit is configured, the Configuration Manager displays the Select Protocols window (Figure 2-3) from which you select the bridging/routing protocols you want to run over that circuit.

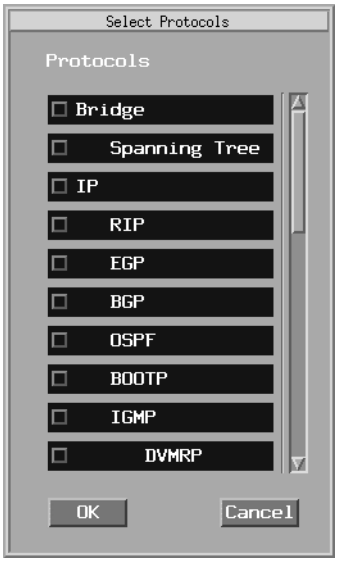

Figure 2-3. Select Protocols Window

The window differs slightly according to circuit type, displaying only those protocols that the circuit type supports. In addition, for certain circuit types, the window allows you to select the protocol priority feature (refer to *Configuring Traffic Filters and Protocol Prioritization* for instructions about configuring protocol prioritization).

To enable bridging/routing services, complete the following steps:

1. **Select all bridging/routing protocols that you want to enable on the circuit.**
2. **Click on OK.**

If you select Spanning Tree, the Configuration Manager enables the Bridge protocol because Spanning Tree is a Bridging service. (Note that in the Select Protocols window, Spanning Tree is indented beneath the Bridge line.) Similarly, if you select RIP, EGP, BGP, OSPF, BOOTP, IGMP, or DVMRP, the Configuration Manager enables IP because these are all IP services. If you select RIP (IPX) or RIP (XNS), IPX or XNS is enabled automatically.

For each protocol you select, the Configuration Manager generally displays a protocol-specific configuration window prompting for additional required information. Some protocols (for example, Bridge, VINES, and NetBIOS) require no additional information to provide default service. In such cases, no pop-up window appears.

For each protocol-specific pop-up window that appears, you must specify the required configuration information. You can then accept default values for the remaining parameters needed to enable that protocol on the circuit, or edit the default settings. To accept default values, click on OK in each pop-up window after specifying the required information. The Configuration Manager then displays the pop-up window for the next protocol enabled on the circuit.

For information on the parameters in the protocol-specific pop-up windows, refer to the appropriate protocol-specific guide for instructions.

Table 2-3 lists the manuals that describe how to define and edit parameters for routing and bridging protocols. Refer to them as necessary to specify the protocol-specific parameters displayed in each pop-up window.

Table 2-3. Related Protocol Documentation

Protocol	Corresponding Manual
AppleTalk	Configuring AppleTalk Services
APPN	Configuring APPN Services
ATM DXI	Configuring ATM DXI Services
ATM UNI	Configuring ATM Services
BOOTP	Configuring SNMP, RMON, BOOTP, DHCP, and RARP Services
Data Compression	Configuring Data Compression Services
DECnet	Configuring DECnet Services
DHCP	Configuring SNMP, RMON, BOOTP, DHCP, and RARP Services
DLSw	Configuring DLSw Services
DVMRP	Configuring IP Multicasting Services
Frame Relay	Configuring Frame Relay Services
IGMP	Configuring IP Multicasting Services

(continued)

Table 2-3. Related Protocol Documentation *(continued)*

Protocol	Corresponding Manual
IP	Configuring IP Services
IPEX	Configuring X.25 Services
IPX	Configuring IPX Services
LLC	Configuring LLC Services
LNM	Configuring LNM Services
NLSP	Configuring IPX Services
OSI	Configuring OSI Services
NTP	Configuring IP Utilities
PPP	Configuring PPP Services
RARP	Configuring SNMP, RMON, BOOTP, DHCP, and RARP Services
RMON	Configuring SNMP, RMON, BOOTP, DHCP, and RARP Services
SDLC	Configuring SDLC Services
SMDS	Configuring SMDS
SNMP	Configuring SNMP, RMON, BOOTP, DHCP, and RARP Services
Source Routing	Configuring Bridging Services
Spanning Tree	Configuring Bridging Services
ST2	Configuring IP Multicasting Services
TCP	Configuring IP Utilities
TELNET	Configuring IP Utilities
Translation Bridge	Configuring Bridging Services
Transparent Bridge	Configuring Bridging Services
VINES	Configuring VINES Services
X.25	Configuring X.25 Services
XNS	Configuring XNS Services

Once you have defined all protocols enabled on the circuit, you return to the Configuration Manager window. The connector box appears highlighted to indicate that the interface has been added. You can then

- Add more network interfaces.
- Save and implement your configuration, as Chapter 3 describes.

Chapter 3
Implementing Configuration Changes

This chapter tells you how to use the Configuration Manager and the Router Files Manager to implement configuration changes.

In general, you must do the following to implement configuration changes:

1. **Save the configuration file locally.**

   You save dynamically made changes to a *config* file only when you want to maintain a permanent record of the changes.

2. **Transfer the configuration file to the router using TFTP.**

3. **Reboot the router with the configuration file.**

4. **Use the Configuration Change utility if you want to change the configuration file so that it operates on an identical router model.**

The following sections describe each of these tasks.

Saving a Configuration File

The Configuration Manager does not create the configuration file until you save the configuration information you specified. The three sections that follow describe how to save a configuration file locally, remotely, or dynamically. Refer to the appropriate section, depending on the configuration option you selected when you started the Configuration Manager.

Saving a Configuration File in Local Mode

This section describes how to save a configuration created or modified in local mode to a file on the Site Manager workstation.

To save your file, begin at the Configuration Manager window and complete the following steps.

1. **Save the configuration file to the same directory in which Site Manager is located, or to another directory:**

   -- Select File > Save to save to the same directory.

   -- Otherwise, select File > Save As. The Save Configuration File window appears (Figure 3-1).

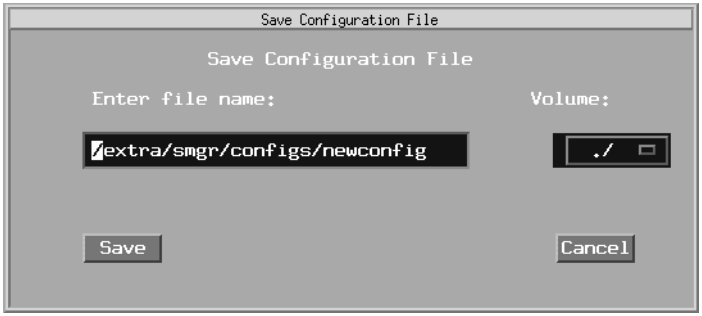

Figure 3-1. Save Configuration File Window

Specify the appropriate directory by clicking on the Volume button and dragging to the volume of your choice. Then click on the Save button.

The File Saved window appears (Figure 3-2).

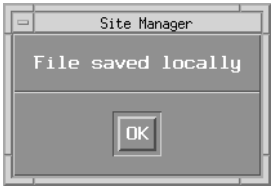

Figure 3-2. File Saved Window

2. **Click on OK.**

Select File > Exit if you want to exit the Configuration Manager window. You return to the Site Manager main window.

Refer to the section “Transferring a Configuration File to the Router” if you want to transfer the configuration file to the router. You must do this if you want to boot the router with this file.

Saving a Configuration File in Remote Mode

This section describes how to save a configuration created or modified in remote mode to a file on the router.

Caution: When you save a configuration file in remote mode, the Configuration Manager uses TFTP to transfer the file to the router’s file system. The destination system in a file transfer overwrites any file already on its volume that has the same filename.

If enough space does not exist on the file system for the new file, and the new file has the same name as an old file, the old file will be destroyed and the new file will be corrupted. This is because TFTP copies the new file over the old and runs out of space before completing the copy. Be sure to follow the instructions in this section to avoid corrupting the config file in the router if the Configuration Manager is in remote mode.

To save a *config* file created or modified in remote mode, follow these steps:

1. **If the file system on the router is an NVFS, compact the memory card to optimize the available space. If the file system on the router is DOS, disregard this step, and go to Step 2.**

Note: Before you use the Compact option, we recommend that you back up the files by copying them to a second memory card. If possible, compact file space at off-peak times due to the resource requirements to perform the compaction.

To compact the memory card, follow these steps:

a. **Select Tools > Router Files Manager in the Bay Networks Site Manager window.**

The Router Files Manager window appears (Figure 3-3).

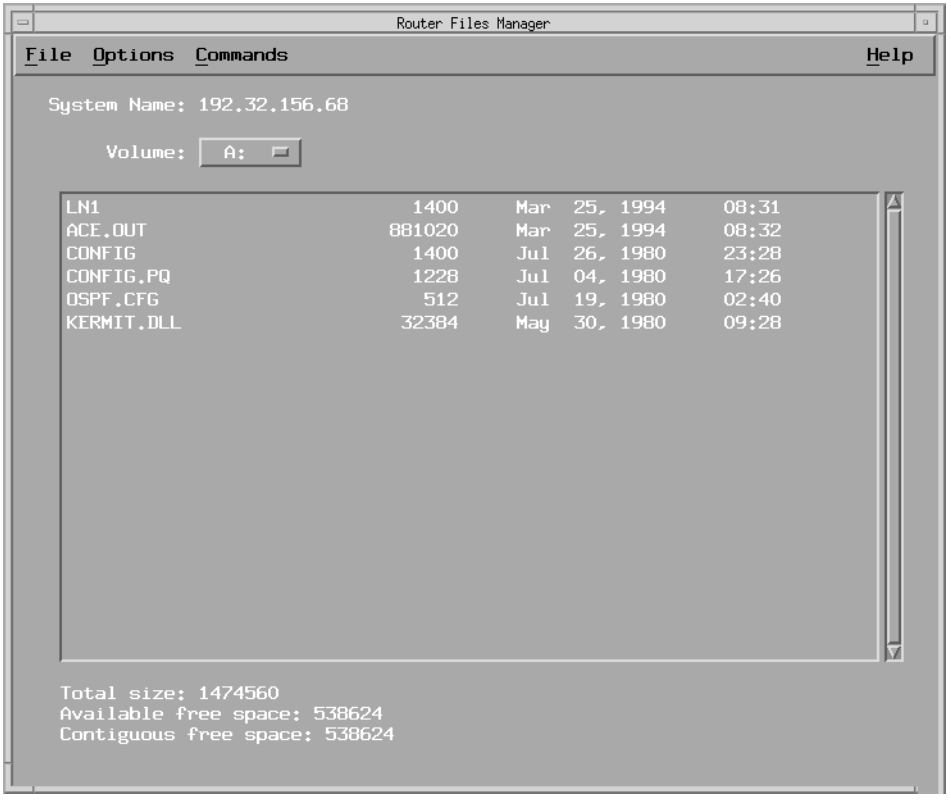
Router Files Manager
File Options Commands Help
System Name: 192.32.156.68
Volume: A:
LN1 1400 Mar 25, 1994 08:31
ACE.OUT 881020 Mar 25, 1994 08:32
CONFIG 1400 Jul 26, 1980 23:28
CONFIG.PQ 1228 Jul 04, 1980 17:26
OSPF.CFG 512 Jul 19, 1980 02:40
KERMIT.DLL 32384 May 30, 1980 09:28
Total size: 1474560
Available free space: 538624
Contiguous free space: 538624

Figure 3-3. Router Files Manager Window

b. Select Commands > Compact.

A confirmation window appears (Figure 3-4).

Figure 3-4. Compact Confirmation WIndow

c. **Click on OK in the confirmation window.**

Note: On AN routers, the compacting operation can take up to 12 minutes. Do not reset the AN during this time. Resetting the AN during compacting will corrupt the flash memory, and the AN will not boot until you replace the flash memory media.

2. **Select File > Save As from the Configuration Manager window.**

   The Save Configuration File window appears (Figure 3-5).

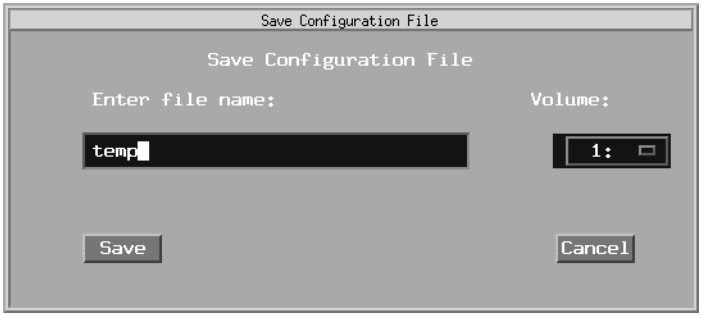

Figure 3-5. Save Configuration File Window

3. **Enter a new filename, such as *temp*, and click on Save. Do *not* use the filename *config*.**

   The File Saved pop-up window appears (Figure 3-6).

Figure 3-6. File Saved Pop-up Window

4. **Click on OK.**

You replace an old configuration file with the new one as follows:

1. **Verify the integrity of the new file first by booting with that file.**

   Refer to the section “Rebooting a Router with a Configuration File” later in this chapter.

2. **Verify that there is enough space on the volume for another copy.**

   Select Tools > Router Files Manager in the Bay Networks Site Manager window.

   The Router Files Manager window (Figure 3-3) displays the files, file sizes, and available free space. The contiguous free space displayed in this window applies only to memory cards.

3. **Ensure that there is enough space on the volume for the file.**

   DOS Instructions: Ensure that the space occupied by the new file is not larger than the available free space.

   NVFS Instructions: Ensure that the space occupied by the new file is not larger than the contiguous free space.

4. **If enough space is available, copy the file to the old filename.**

   Refer to *Managing Routers and BNX Platforms* for detailed file management instructions.

Saving a Configuration File in Dynamic Mode

If you made changes to the currently active configuration file in dynamic mode, you can save these changes to a file on the router’s file system. This preserves the current configuration file, yet gives you the option to reboot the router with these changes later. When you save these changes, the file is saved directly to the router.

To save your changes, start at the Configuration Manager window and complete the following steps:

1. **Select File > Save As.**

   The Save Configuration File window appears (Figure 3-7).

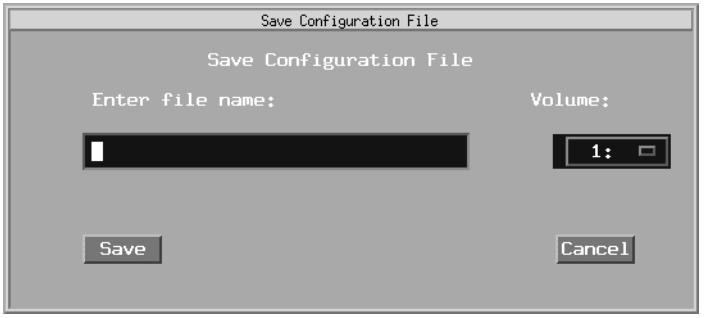

Figure 3-7. Save Configuration File Window

2. **Enter a new filename to save the configuration file on the router, using the following format:**

   filename.**cfg**

   where *filename* is the name you are assigning this file, and **cfg** specifies the file type.

3. **If the file system on the router is an NVFS, and the volume (slot location of the memory card on the router) that appears in the Volume box is not the volume to which you want to save this file, click on the Volume box and select an alternate volume. Otherwise, go to the next step.**

4. **Click on Save.**

   The File Saved pop-up window appears (shown earlier in Figure 3-6), prompting you to confirm your decision to save the file.

5. **Click on OK in the File Saved pop-up window.**

If you want to reboot the router with the file you just created and saved, refer to the section “Rebooting a Router with a Configuration File.”

Transferring a Configuration File to the Router

The Router Files Manager lets you transfer files between the Site Manager workstation and any Bay Networks router using TFTP. You must transfer a configuration file that has been configured and saved in local mode to the router before you can reboot the router with it.

Caution: The destination system in a file transfer automatically overwrites any file already on its volume that has the same filename. If enough space does not exist on the file system for the new file, and the new file has the same name as an old file, the old file will be destroyed and the new file will be corrupted. This is because TFTP copies the new file over the old and runs out of space before completing the copy. Be sure to follow the instructions in this section to avoid corrupting the config file.

To transfer files from the Site Manager workstation to a router, you must do the following:

1. **Choose the router to which you want to transfer the file.**
2. **Examine the existing filenames on the router destination volume.**
3. **Verify that adequate free space exists on the destination volume.**
4. **Transfer the file to the destination volume.**

The following sections describe these tasks.

Choosing a Router

To choose the router to which you want to transfer the file, follow these steps from the Router Files Manager window:

1. **Select Options > Router Connection from the Router Files Manager window.**

   The Router Connection Options window appears (Figure 3-8).

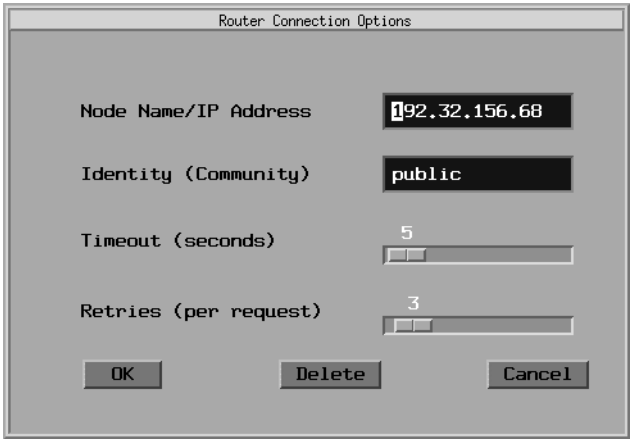

Figure 3-8. Router Connection Options Window

2. **In the Node Name/IP Address field, enter the IP address of the router. Then click on OK.**

Examining Filenames on the Router Destination Volume

The Router Files Manager window displays the names of the files currently on the router (Figure 3-9).

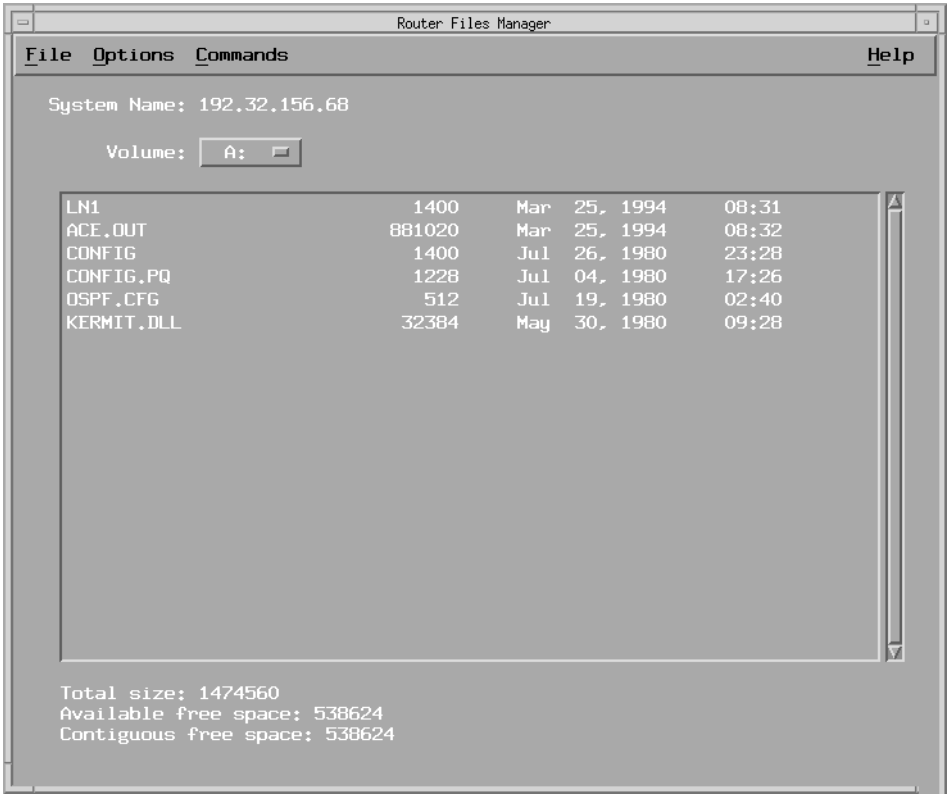
Router Files Manager
File Options Commands Help
System Name: 192.32.156.68
Volume: A:
LN1 1400 Mar 25, 1994 08:31
ACE.OUT 881020 Mar 25, 1994 08:32
CONFIG 1400 Jul 26, 1980 23:28
CONFIG.PQ 1228 Jul 04, 1980 17:26
OSPF.CFG 512 Jul 19, 1980 02:40
KERMIT.DLL 32384 May 30, 1980 09:28
Total size: 1474560
Available free space: 538624
Contiguous free space: 538624

Figure 3-9. Router Files Manager Window

Choose a filename that is different from any currently on the router when transferring the file.

Verifying Space on the Destination Volume

Make sure that the router destination volume has enough space available for the file you want to transfer. The Router Files Manager window shows the available free space and contiguous free space on the router.

For a DOS file system, refer to the number of bytes displayed for available free space.

For an NVFS file system, refer to the number of bytes displayed for contiguous free space.

If the file system on the router is an NVFS, compact the memory card to optimize the available space as follows:

1. **Select Commands > Compact in the Router Files Manager window.**
2. **Click on OK in the Confirmation window.**

Transferring the Configuration File

To transfer a file from the Site Manager workstation to the router, follow these steps:

1. **Select File > TFTP > Put File(s) from the Router Files Manager window.**

   The TFTP Put File Selection window appears (Figure 3-10).

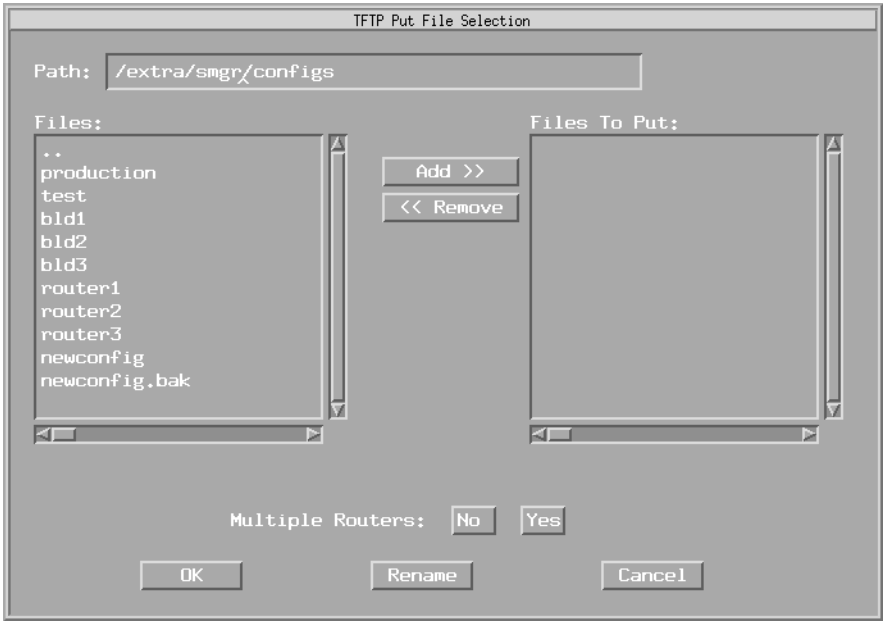

Figure 3-10. TFTP Put File Selection Window

2. **In the Path box, enter the pathname of the directory on the Site Manager workstation that contains the file you want to transfer.**

The files in that directory appear in the Files window. You may transfer more than one file at a time.

3. **In the Files window, click on the files that you want to transfer to the router. Then click on Add.**

   The selected files appear in the Files To Put window.

   If you inadvertently add files that you do not want to transfer to the router, select those files in the Files To Put window and click on Remove.

4. **Repeat Steps 2 and 3 to select files from other directories that you want to transfer to the router.**

5. **If you want to send files to only one router, click on No in the Multiple Routers field.**

   The Router Files Manager transfers the selected files to the router to which you are currently connected.

   Refer to *Managing Routers and BNX Platforms* for information on transferring files to multiple routers.

6. **Click on OK.**

   During the file transfer operation, the Router Files Manager displays a message in the window indicating which file is currently being transferred, and the address of the router that is receiving the files. When the transfer is complete, the TFTP Put File Selection window closes and you return to the Router Files Manager window.

Now that you have transferred your configuration file to the router, you can reboot the router with it. The next section provides instructions.

To replace an old configuration file with a new one, follow these steps:

1. **Verify the integrity of the new file first by booting with that file.**

2. **Verify that there is enough space on the volume for another copy by selecting Tools > Router Files Manager from the Bay Networks Site Manager window.**

   The Router Files Manager window displays the files, file sizes, and available free space. The contiguous free space displayed in this window applies only to memory cards.

3. **Ensure that there is enough space on the volume for the file.**

DOS Instructions: Ensure that the space occupied by the new file is not larger than the available free space.

NVFS Instructions: Ensure that the space occupied by the new file is not larger than the contiguous free space.

4. **If enough space is available, copy the file to the old filename.**

   Refer to *Managing Routers and BNX Platforms* for detailed file management instructions.

Rebooting a Router with a Configuration File

After you save a configuration file to the router, you implement the configuration by rebooting the router with that file. Begin from the Bay Networks Site Manager window and proceed as follows:

1. **Select Administration** > **Boot Router.**

   The Boot Router window appears (Figure 3-11). The default volume is displayed next to the Boot Image file *(bn.exe*) and default configuration file (*config*). The default volume is the first available memory access card (indicated by slot number) on a router with a non-volatile file system (NVFS), or volume A on a router with a DOS file system.

   Refer to Step 2 if you want to boot from the default volume and configuration file.

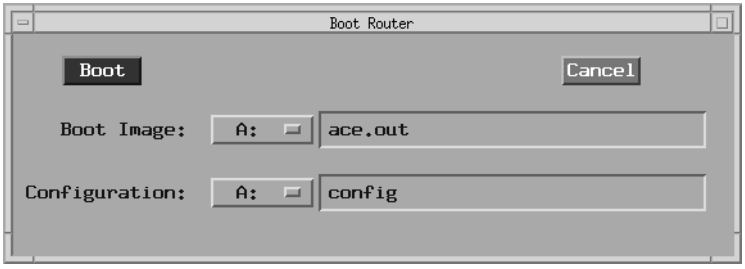

Figure 3-11. Boot Router Window

If the router has multiple volumes, you can select one volume from which to read the router software image and another from which to read the configuration file, as follows:

a. **Click on the rectangle adjacent to the Boot Image volume number.**

   A pop-up window displays the available volumes containing the router software image.

b. **Click on the number of the slot from which you want to boot.**

   The pop-up window closes and the new slot number appears next to Boot Image.

c. **Click on the rectangle adjacent to the Configuration slot number.**

   A pop-up window displays the available slots containing the configuration file.

d. **Click on the number of the slot you want to configure from.**

   The pop-up window closes and the new slot number appears.

If you want to configure from an alternative file, enter the configuration filename in the Configuration filename box.

2. **Click on Boot.**

   The router boots using the router software image and the configuration file you specified.

Note: The router software image and configuration file revert to their respective default volumes and filenames after every boot. To change the default boot or configuration file, back up the old default file using the Copy option; then overwrite the old default file with the new default file, using the Copy option.

After you successfully reboot the router with a configuration file, and it is up and running on your network, it is actively routing and bridging traffic.

Chapter 4
Editing Circuits

This chapter describes how to edit circuits. The Configuration Manager lets you

- Add protocols to a circuit
- Delete protocols from a circuit
- Delete a circuit from the router
- Rename a circuit
- Move a circuit
- Assign additional IP addresses to a circuit

Adding Protocols to a Circuit

To add protocols to a circuit, begin at the Configuration Manager window:

1. **Select Circuits** > **Edit Circuits.**

   The Circuit List window appears (Figure 4-1).

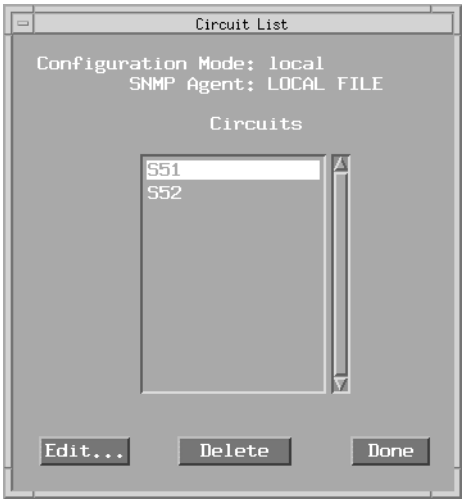

Figure 4-1. Circuit List Window

2. **Select the circuit to which you want to add protocols.**
3. **Click on Edit.**

   The Circuit Definition window appears (Figure 4-2).

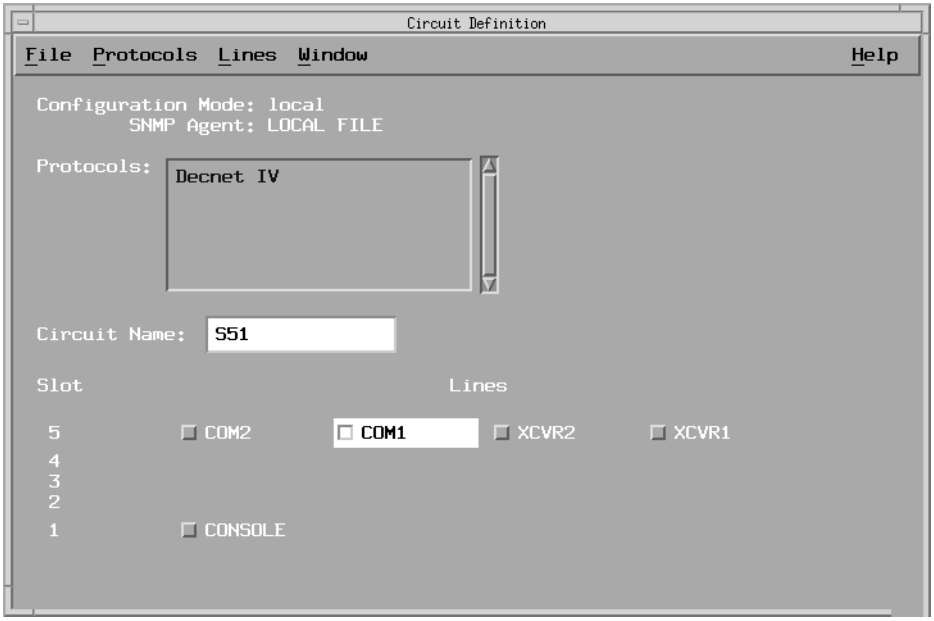

Figure 4-2. Circuit Definition Window

4. **Select Protocols > Add/Delete.**

   The Select Protocols window appears (Figure 4-3).

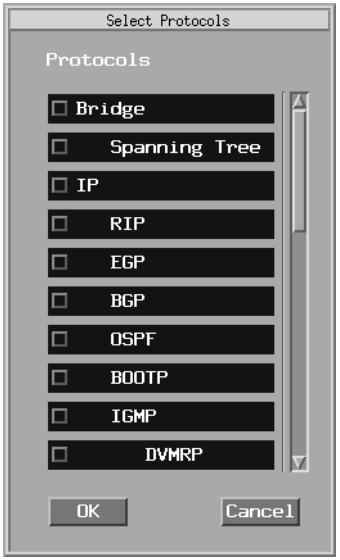

Figure 4-3. Select Protocols Window

5. **Select the protocols that you want add to this circuit; then click on OK.**

   For each protocol you add, the Configuration Manager displays a configuration window prompting you to define each protocol you enabled on the circuit.

6. **Define each protocol you added to the circuit.**

   To do this, refer to the appropriate manuals. See Chapter 2 for a complete list of the Bay Networks protocol-specific manuals.

Repeat Steps 1 through 6 for each circuit to which you want to add protocols.

Deleting Protocols from a Circuit

To delete protocols from a circuit, begin at the Configuration Manager window:

1. **Select Circuit** > **Edit Circuits.**

   The Circuit List window appears (Figure 4-1).

2. **Select the circuit from which you want to delete protocols.**

3. **Click on Edit.**

   The Circuit Definition window appears (Figure 4-2).

4. **Select Protocols > Add/Delete.**

   The Select Protocols window appears (Figure 4-3).

5. **Click on the box beside each protocol that you want to delete from this circuit.**

6. **Click on OK.**

   You return to the Circuit Definition window. The protocols you just deleted no longer appear in the Protocols scroll box.

7. **Follow Steps 1 through 6 for each circuit from which you want to delete protocols.**

Deleting a Circuit from the Router

When you delete a circuit from the router, you remove all line and protocol information from the circuit. You will need to go through the process for adding network interfaces if you want to redefine this circuit.

To delete a circuit from the router, begin at the Configuration Manager window and complete the following steps:

1. **Select Circuits > Delete Circuit.**

   The Circuit List window appears (Figure 4-1).

2. **Select the circuit you want to delete from the list of circuits.**

3. **Click on Delete.**

   The Delete Circuit window appears (Figure 4-4), with the circuit you selected specified.

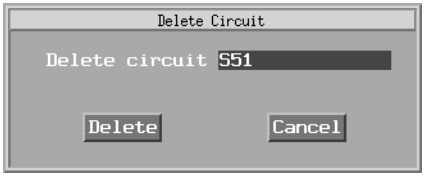

Figure 4-4. Delete Circuit Window

4. **Click on Delete.**

   The circuit is deleted from the router, and no longer appears in the Circuit List window.

5. **Repeat Steps 1 through 4 for each circuit that you want to delete from the router.**

Renaming a Circuit

To rename a circuit on the router, begin at the Configuration Manager window and complete the following steps:

1. **Select Circuits** > **Edit Circuits.**

   The Circuit List window appears (Figure 4-1).

2. **Select the circuit that you want to rename from the list of circuits.**
3. **Click on Edit.**

   The Circuit Definition window appears (Figure 4-2).

4. **Enter a new name for this circuit in the Circuit Name box.**
5. **Select Lines** > **Change Lines; the circuit's new name is saved.**
6. **Follow Steps 1 through 5 for each circuit that you want to rename.**
7. **Select File** > **Exit to exit this window when you are finished.**

Moving a Circuit

Once you configure a circuit on a network interface, you can move the circuit to another network interface. When you move a circuit to a different type of network interface (for example, when you move an Ethernet circuit to an FDDI network interface connector), the Configuration Manager notes the type of connector for the circuit interface, and provides the appropriate line detail parameters.

To move a circuit, begin at the Configuration Manager window and complete these steps.

1. **Select Circuits** > **Edit Circuit.**

   The Circuit List window appears (Figure 4-1).

2. **Select the circuit that you want to move from the list of circuits.**

3. **Click on Edit.**

   The Circuit Definition window appears (Figure 4-5). The name of the circuit you want to move appears in the Circuit Name box, and the connector for the circuit interface is highlighted.

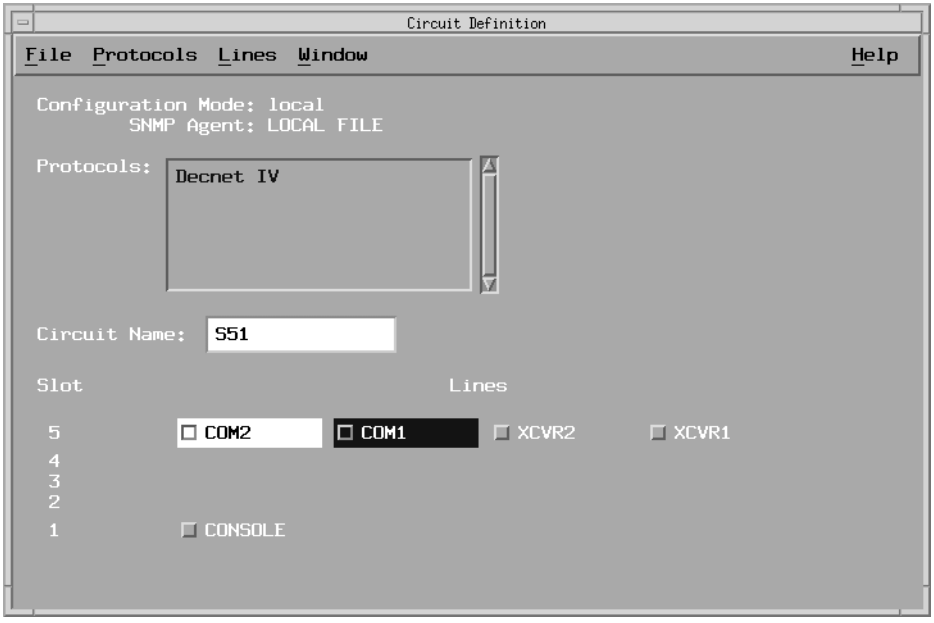

Figure 4-5. Moving a Circuit

4. **Click on the circuit's connector.**

   The circuit is removed from the connector, and the connector is no longer highlighted.

5. **Click on the new connector for the circuit interface.**

   The connector you chose is now highlighted, indicating that the circuit now connects to it. For example, in Figure 4-5, Circuit S51 was moved to the connector COM2.

   You may want to rename the circuit if you think the old circuit name may cause some confusion. To do this, enter a new name in the Circuit Name box.

6. **Select Lines > Change Lines.**

   The Configuration Manager window reflects all circuit moves.

7. **Follow Steps 1 through 6 for each circuit that you want to move.**

8. **Select File > Exit to exit this window when you are done.**

Changing Network Addresses on a Circuit

You can change network addresses on a circuit using the Configuration Change Utility. For information on this utility, see the section "Configuration Change Utility" in Chapter 3.

Assigning an Additional IP Address to a Circuit

Bay Networks IP routing supports Multinet, which lets you assign multiple IP addresses to a single circuit; thus, one circuit can support multiple IP network interfaces. Each IP address on a Multinet circuit must belong to a unique network/subnet. You cannot have two interfaces on the same subnet.

For more information about Multinet, see *Configuring IP Services*.

You can assign as many IP addresses as you want to a circuit. To assign additional IP addresses to a circuit, begin at the Configuration Manager window and complete the following steps:

1. **Select Circuits > Edit Circuits.**

   The Circuit List window appears (Figure 4-1).

2. **Select the circuit to which you want to assign an additional IP address, and then click on Edit.**

   The Circuit Definition window appears (Figure 4-2).

3. **Select Protocols > Edit IP > Interfaces.**

   The IP Interfaces window appears (Figure 4-6).

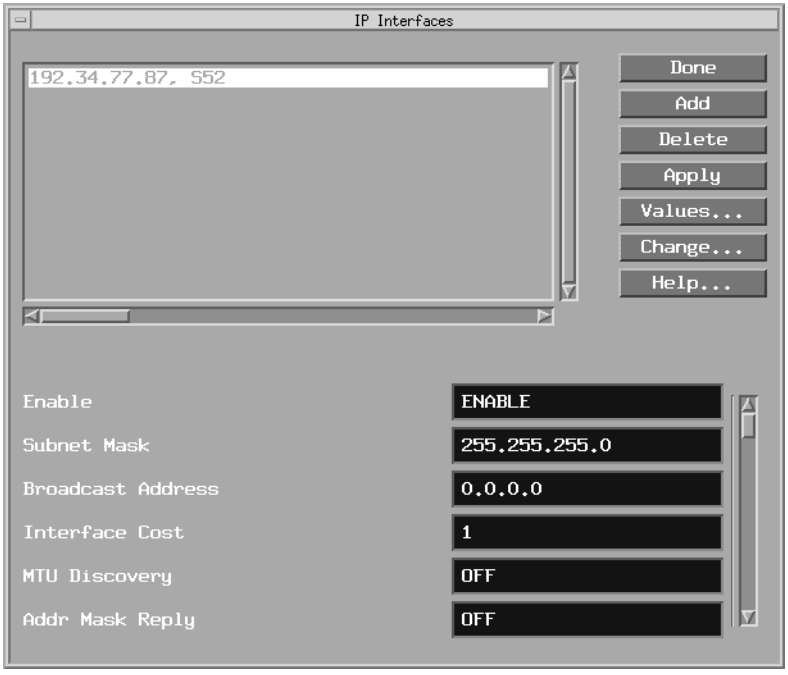

Figure 4-6. IP Interfaces Window

4. Click on Add.

The IP Configuration window appears (Figure 4-7).

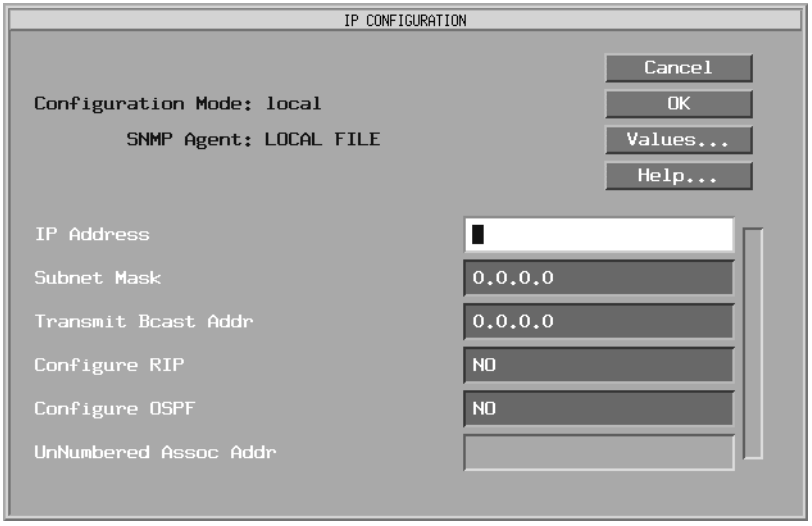

Figure 4-7. IP Configuration Window

5. **Enter the IP address you want to assign to this circuit in the IP Address box.**
6. **Click on OK.**

   You return to the IP Interfaces window. The address you just assigned to the specified circuit appears in the Interfaces scroll box.
7. **Follow Steps 1 through 6 for each IP address you want to add to a circuit.**

Chapter 5
Configuring a Connection to the Technician Interface

To configure the router's console port to connect the router to the Technician Interface, follow these steps:

1. **Click on the Console button in the Configuration Manager window (Figure 5-1).**

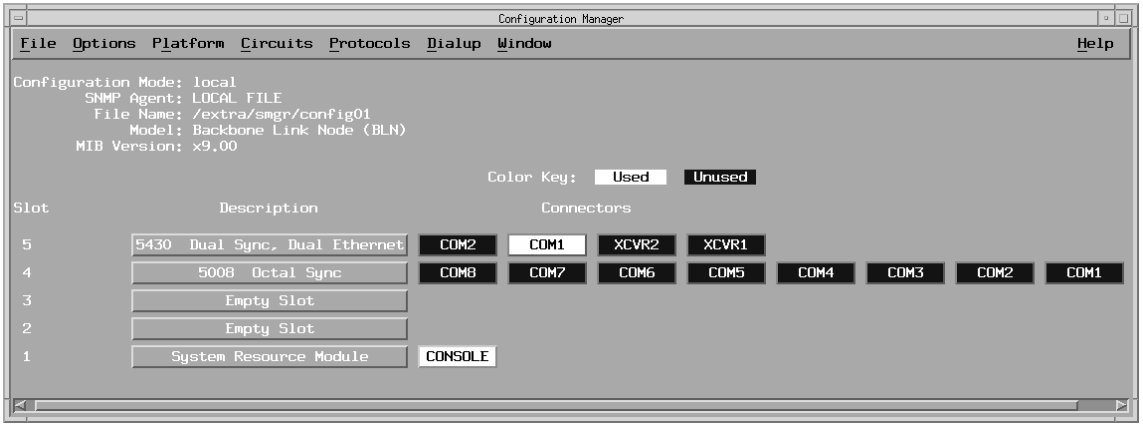

Figure 5-1. Console Button

The Console Lists window appears (Figure 5-2).

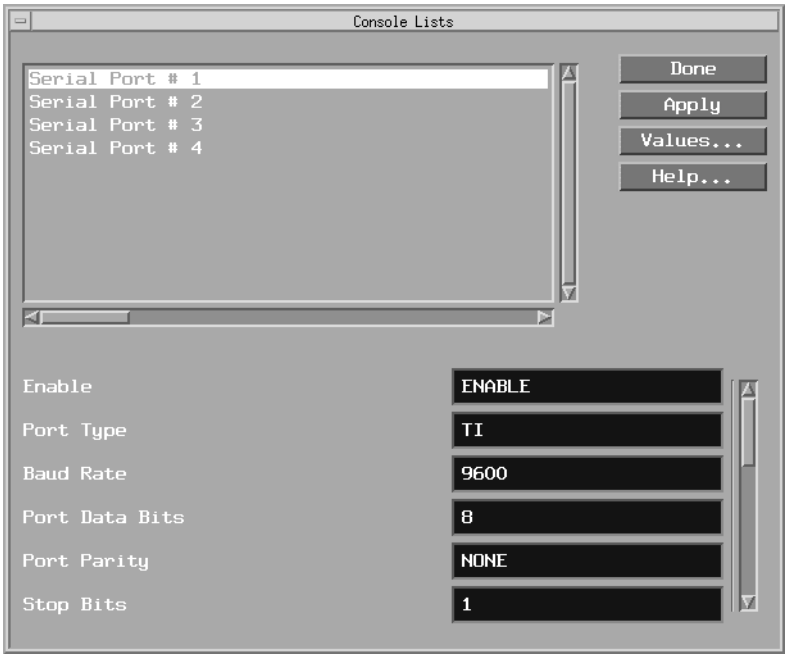

Figure 5-2. Console Lists Window

The Console Lists window displays the router's serial (console) ports. Console ports are the physical ports on a router for system input/output. The number of ports depends on the router model. For example, the Bay Networks AFN™ router has two serial ports, labeled Console and Modem.

2. **Select a console port from the Console Lists window and then edit its parameters.**

   Refer to the parameter descriptions that follow this procedure.

3. **When you finish editing the console port parameters, click on Apply to save your changes.**

4. **When you are done with all ports, click on Done to exit the window and save your changes.**

The following are descriptions of the parameters in the Console Lists window (Figure 5-2). For each parameter, we provide information about default settings, valid parameter options, the parameter function, instructions for setting the parameter, and the Management Information Base (MIB) object ID.

Parameter:	**Enable**
Default:	Enable (first port) Disable (other ports)
Options:	Enable | Disable
Function:	Enables or disables the serial ports. The first port on a router is enabled by default. The other ports on routers with multiple ports are disabled by default.
Instructions:	Select the status of the serial port.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.2

Parameter:	**Port Type**
Default:	TI
Options:	TI
Function:	Configures the port for the Technician Interface.
Instructions:	Select the port type.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.7

Parameter:	**Baud Rate**
Default:	9600
Options:	9600 | 4800 | 2400 | 1200 | 600 | 300
Function:	Specifies the rate of data transfer between the console and the router.
Instructions:	Set according to your console requirements.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.8

Parameter:	**Port Data Bits**
Default:	8
Options:	7 | 8
Function:	Specifies the number of bits in each ASCII character received or transmitted by the router.
Instructions:	Set according to your console requirements.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.9

Parameter:	**Port Parity**
Default:	None
Options:	None | Odd | Even
Function:	Enables or disables data error detection for each character transmitted or received.
Instructions:	Set according to your console requirements. Odd or Even enables data error detection. None disables data error detection.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.10

Parameter:	**Stop Bits**
Default:	1 bit
Options:	1 | 1.5 | 2 bits
Function:	Specifies the number of bits that follow each ASCII character received or transmitted by the router.
Instructions:	Set according to your console requirements.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.11

Parameter:	**Modem Enable**
Default:	Disable
Options:	Enable | Disable
Function:	Specifies whether the terminal is connected directly or via a modem to the Technician Interface.
Instructions:	Select Enable if the terminal is connected via a modem to the Technician Interface. Select Disable if the terminal is connected directly to the Technician Interface.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.12

Parameter:	**Lines Per Screen**
Default:	24
Range:	1 to 99
Function:	Specifies the maximum number of lines displayed on the console screen.
Instructions:	Set according to your console requirements.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.13

Parameter:	**More Enable**
Default:	Enable
Options:	Enable | Disable
Function:	Specifies whether the Technician Interface pauses after the screen fills with data.
Instructions:	Select Enable to configure the Technician Interface to pause after the screen fills with data. Select Disable to configure the Technician Interface not to pause after the screen fills with data.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.14

Parameter:	**Prompt**
Default:	$
Options:	Any string of up to 19 keyboard characters except for control key sequences.
Function:	Specifies the text used as a prompt on your console screen. Place quotes around any spaces you want to include in the text.
Instructions:	Accept the default or enter a different text string.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.15

Parameter:	**Login Timeout**
Default:	1
Range:	1 to 99 (99 indicates infinity)
Function:	Specifies the number of minutes the Technician Interface waits to time out when no one has pressed the Enter key after the `Login:` prompt. This parameter is valid only when Modem Enable is set to Enable. The Technician Interface ends the connection when the timeout value is exceeded.
Instructions:	Accept the default or enter a new timeout value.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.16

Parameter:	**Password Timeout**
Default:	1
Range:	1 to 99 (99 indicates infinity)
Function:	Specifies the number of minutes the Technician Interface waits to time out when no one has pressed the Enter key after the `Password:` prompt. This parameter is valid only when Modem Enable is set to Enable. The Technician Interface returns to the `Login:` prompt when the timeout value is exceeded.
Instructions:	Accept the default or enter a new timeout value.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.17

Parameter:	**Command Timeout**
Default:	15
Range:	1 to 99 (99 indicates infinity)
Function:	Specifies the number of minutes that can elapse before the Technician Interface disconnects the session if you do not enter a command at the command prompt. This parameter is valid only when Modem Enable is set to Enable.
Instructions:	Accept the default or enter a new timeout value.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.18

Parameter:	**Login Retries**
Default:	3
Range:	1 to 99 (99 indicates infinity)
Function:	Specifies the maximum number of login attempts you can make before the Technician Interface disconnects the session. This parameter is valid only when Modem Enable is set to Enable.
Instructions:	Accept the default or enter a new retry value.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.19

Parameter:	**Manager Auto Script**
Default:	None
Options:	None
Function:	Defines the manager's login script file, which is automatically executed for each login.
Instructions:	Enter the name of the login script file for the manager. For more information, refer to *Using Technician Interface Software*.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.29

Parameter:	**User Auto Script**
Default:	None
Options:	None
Function:	Defines the user's login script file, which is automatically executed for each login.
Instructions:	Enter the name of the login script file for the user. For more information, refer to *Using Technician Interface Software*.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.30

Parameter:	**Force User Logout Enable**
Default:	Disable
Options:	Enable | Disable
Function:	Enabling this option forces the user to log out if he or she tries to escape from the autoscript.
Instructions:	Select Enable to force the user to log out if an attempt is made to escape the autoscript.
MIB Object ID:	1.3.6.1.4.1.18.3.3.2.11.1.1.31

Chapter 6
Specifying Administrative Information

This chapter describes how to specify a system name, contact, and location for the router using the Configuration Manager. When you access the router from the main Site Manager window, Site Manager retrieves this administrative information and displays it in the window.

To specify router administrative information, begin at the Configuration Manager window and complete the following steps:

1. **Select Platform > Edit System Information.**

   The Edit System Description Parameters window appears (Figure 6-1).

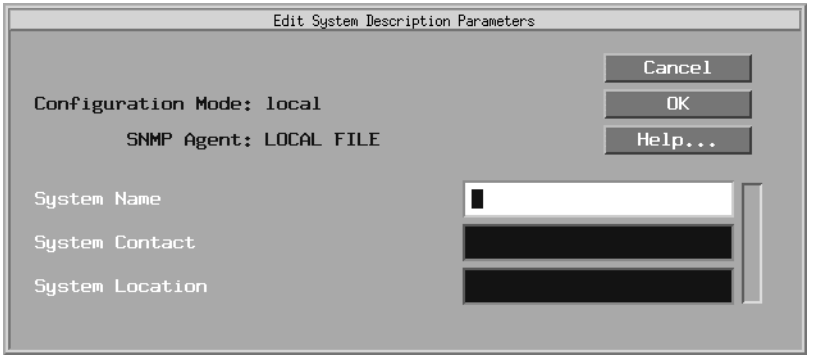

Figure 6-1. Edit System Description Parameters Window

2. **Enter the required information.**

   A description of each parameter follows this procedure.

3. **Click on OK to exit the window and save the administrative information.**

Parameter:	**System Name**
Default:	None
Options:	Any name
Function:	Identifies this router.
Instructions:	Enter the appropriate name for this router.
MIB Object ID:	1.3.6.1.4.1.18.3.3.1.5

Parameter:	**System Contact**
Default:	None
Options:	Any person’s name
Function:	Provides the name of the person to contact regarding issues with this router.
Instructions:	Enter the name of the contact person, and possibly a way to contact that person.
MIB Object ID:	1.3.6.1.4.1.18.3.3.1.4

Parameter:	**System Location**
Default:	None
Options:	Any place
Function:	Identifies the physical location of this router.
Instructions:	Enter a location description for this router.
MIB Object ID:	1.3.6.1.4.1.18.3.3.1.6

Appendix A
Modifying Configurations with New Link Modules

When you install a replacement link module or net module that is different from the type you removed, you must edit the router's configuration file to reflect this change.

Note: Only the ASN router uses net modules.

This appendix describes how to edit a router's configuration file to include new link module or net module information. It covers

- Copying the router's configuration file
- Transferring the configuration file to a local directory
- Editing the configuration file
- Transferring the edited configuration file to the router
- Rebooting the router with the edited configuration file
- Deleting the old configuration file from the router
- Renaming the edited configuration file to the default

Copying the Configuration File

To work with a router's configuration file, you should first create a copy of the file to transfer to your workstation. To copy the file, follow these steps:

1. **Connect to the router.**

   Select Options > Router Connection from the main Site Manager window.

2. **Enter the router's IP address and click on OK.**
3. **From the main Site Manager window, select Tools > Router Files Manager.**

   The Router Files Manager window appears (Figure A-1).

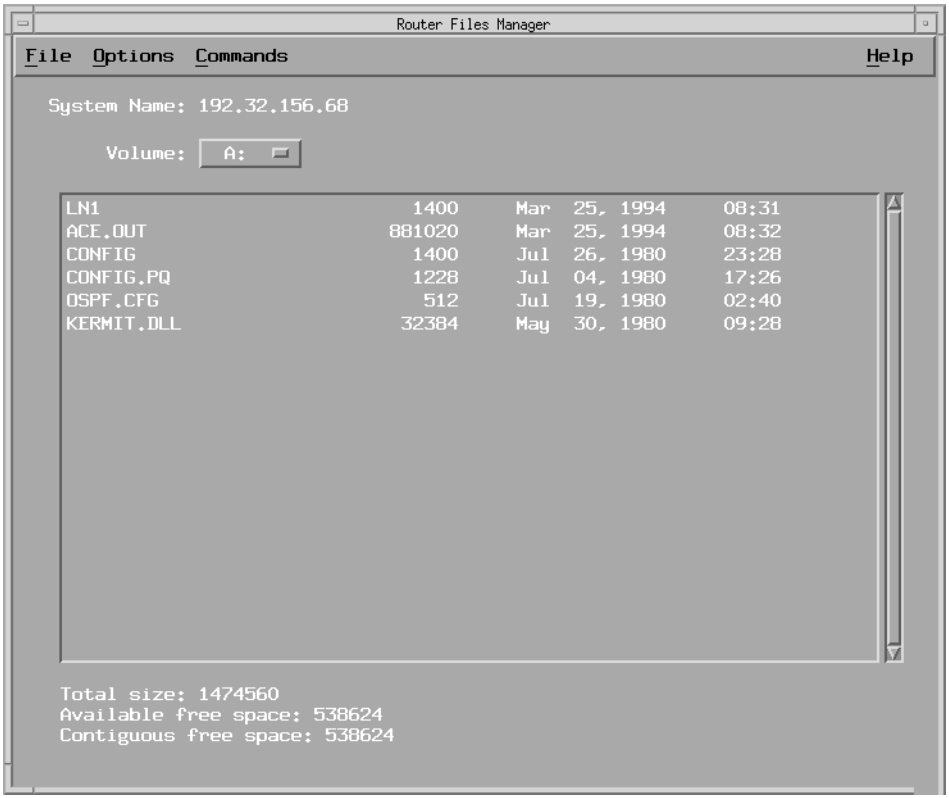
Router Files Manager
File Options Commands Help
System Name: 192.32.156.68
Volume: A:
LN1 1400 Mar 25, 1994 08:31
ACE.OUT 881020 Mar 25, 1994 08:32
CONFIG 1400 Jul 26, 1980 23:28
CONFIG.PQ 1228 Jul 04, 1980 17:26
OSPF.CFG 512 Jul 19, 1980 02:40
KERMIT.DLL 32384 May 30, 1980 09:28
Total size: 1474560
Available free space: 538624
Contiguous free space: 538624

Figure A-1. Router Files Manager Window

4. **Select the router volume where the configuration file resides.**
5. **Select the configuration file from the list that appears in the Router Files Manager window (Figure A-1).**
6. **Select Commands > Copy.**

   The Router Files Manager displays the source filename in a window (Figure A-2).

Figure A-2. Copy File Window Source Filename

7. **Click on OK.**

   A window prompts you for the destination filename (Figure A-3).

Figure A-3. Copy File Window Destination Filename

8. **Enter a new filename for the copy, such as *test.cfg*.**
9. **Click on OK.**

   A confirmation window appears (Figure A-4).

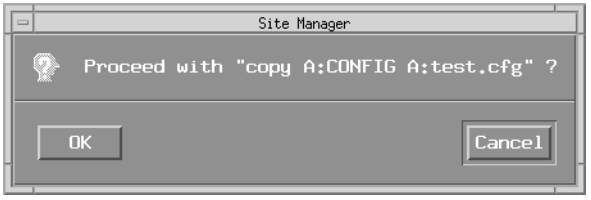

Figure A-4. Copy Confirmation Window

10. **Click on OK.**

The router copies the source file to the filename and volume you specified.

Transferring the Configuration File to a Local Directory

To transfer the copy of the configuration file from the router to your Site Manager workstation, follow these steps from the Router Files Manager window:

1. **Select the router volume where you stored the copy of the router's configuration file.**
2. **Select the file; that is, the copy of the configuration file.**
3. **Select File > TFTP > Get File(s).**

   The TFTP Get Files window appears (Figure A-5).

Figure A-5. TFTP Get Files Window

4. **In the Destination Directory field, enter the directory where you want to store the file on your Site Manager workstation.**
5. **Click on OK to proceed.**

   The configuration file now resides in a local directory on your Site Manager workstation.

Editing the Configuration File

Use the Configuration Manager tool to edit the configuration file you retrieved from the router.

1. **Select Tools** > **Configuration Manager** > **Local File.**

   The File Selection window appears (Figure A-6).

Figure A-6. File Selection Window

2. **Open the configuration file you transferred to the Site Manager workstation.**

   See “Opening an Existing Configuration File” in Chapter 1.

   Once you specify the file, click on Open File. The Configuration Manager window appears. Figure A-7 shows the Configuration Manager window for an ASN.

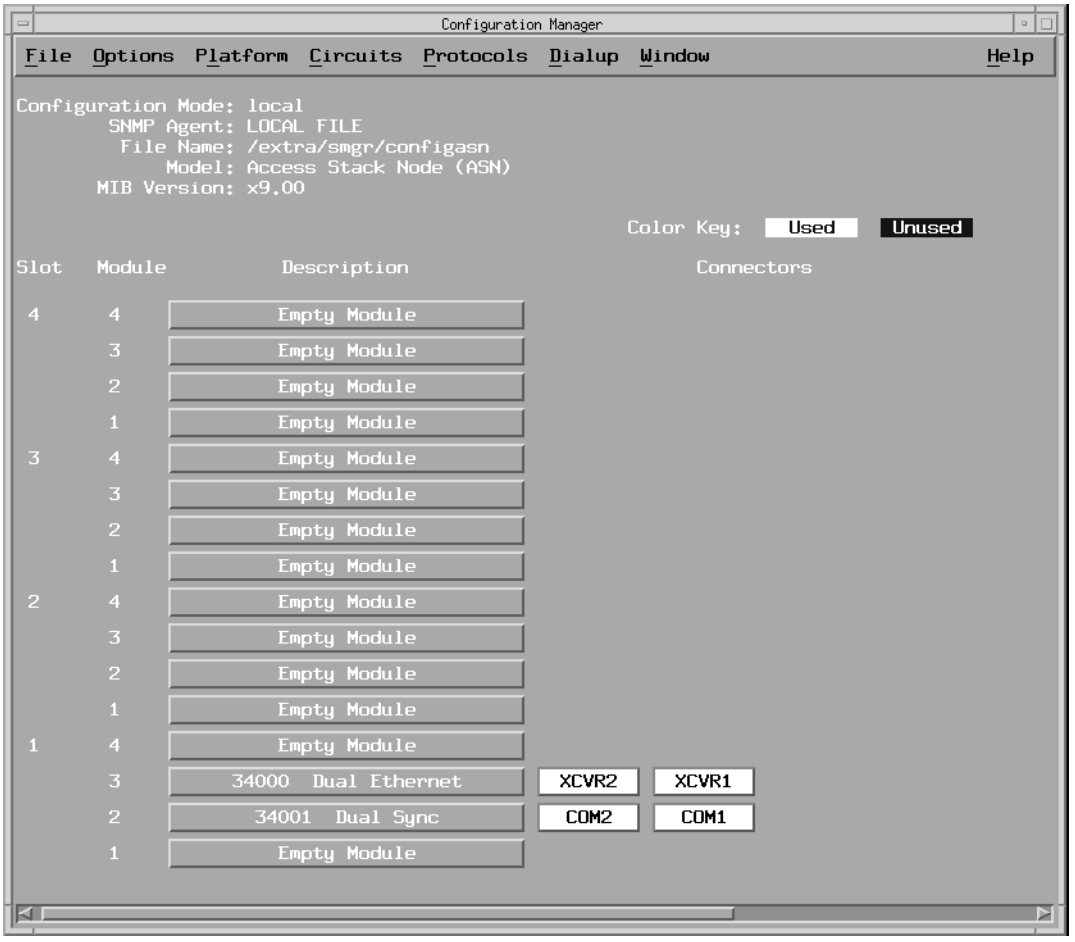

Figure A-7. Configuration Manager Window

3. **Select Circuits > Delete Circuit from the Configuration Manager window.**

   The Circuit List window appears (Figure A-8).

Figure A-8. Circuit List Window

4. **Select a circuit on the slot (and module for ASNs) in which you swapped the link module or net module. Then click on Delete.**

   The Delete Circuit window appears (Figure A-9).

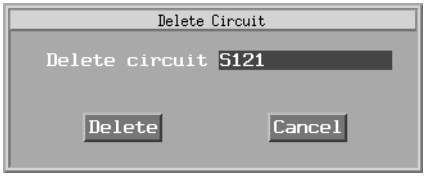

Figure A-9. Delete Circuit Window

5. **Click on Delete again.**
6. **Repeat Steps 4 and 5 for each circuit on the slot (and module).**
7. **Click on Done in the Circuit List window when you are done deleting circuits from this list.**
8. **In the Configuration Manager window, click on the link module or net module you swapped.**

The Module List window appears. Figure A-10 shows the Module List window for an ASN.

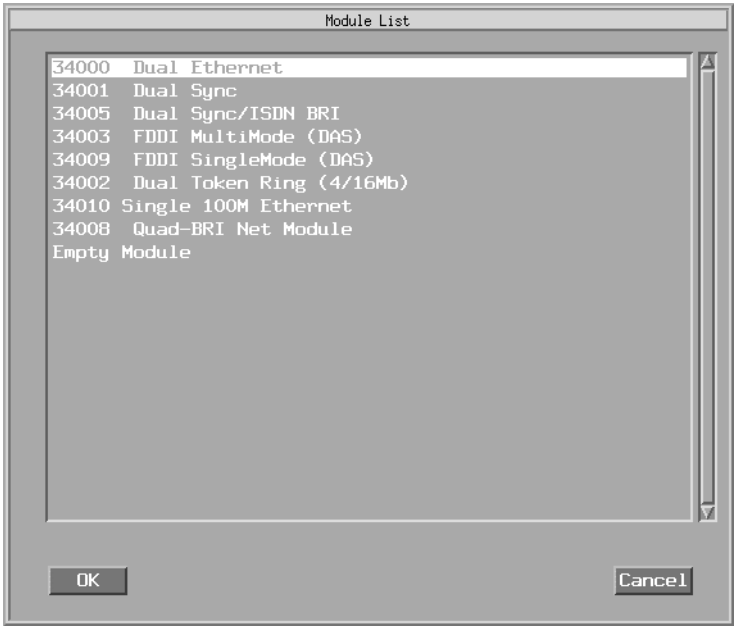

Figure A-10. Module List Window

9. **Select the link module or net module you inserted into the router and click on OK.**

   A confirmation window appears (Figure A-11).

Site Manager
All circuits configured on this Link Module will be deleted!
Do you REALLY want to change this Link Module?
OK
Cancel

Figure A-11. Confirming a Circuit Delete Request

10. **Click on OK in the confirmation window.**

11. **Select File > Save to save your changes.**

    A confirmation window appears (Figure A-12).

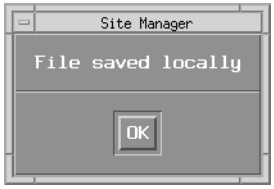

Figure A-12. File Save Confirmation Window

12. **Click on OK in the confirmation window.**

Transferring the Edited Configuration File to the Router

Use the Router Files Manager to transfer the configuration file back to the router.

1. **Select Tools > Router Files Manager to display the Router Files Manager window again.**
2. **Select a router volume.**
3. **Select File > TFTP > Put File(s).**

   The TFTP Put File Selection window appears (Figure A-13).

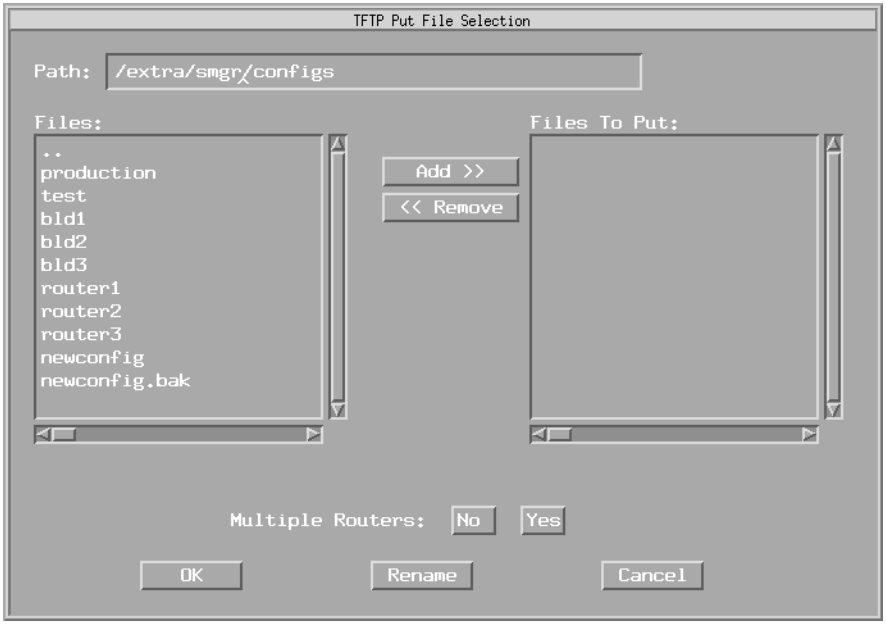

Figure A-13. TFTP Put File Selection Window

4. **In the Path box, enter the pathname of the directory on the Site Manager workstation that contains the configuration file.**

   The files in that directory appear in the Files window.

5. **In the Files window, click on the copy of the configuration file you just edited. Then click on Add.**

   The file appears in the Files to Put window.

6. **Click on No in the Multiple Routers field.**

7. **Click on OK.**

   When the transfer is complete, the TFTP Put File Selection window closes and you return to the Router Files Manager window.

Rebooting the Router with the Edited Configuration File

Use the Administration menu to reboot the router.

1. **From the main Site Manager window, select Administration > Boot Router.**

   The Boot Router window appears (Figure A-14).

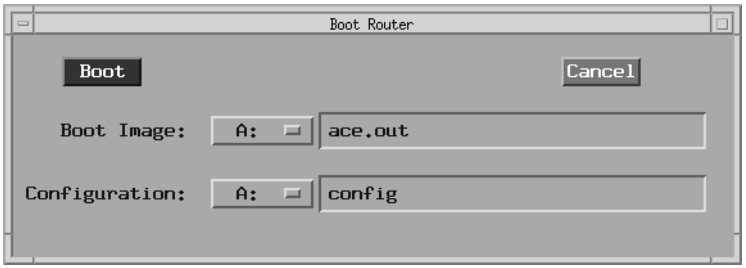

Figure A-14. Boot Router Window

2. **Specify the correct volume and boot image.**
3. **Select the correct router volume and the new configuration file. Then click on Boot.**

   A confirmation window appears.

4. **Click on OK in the confirmation window and wait a few minutes to give the router time to reboot.**
5. **Select View > Refresh Display from the main Site Manager window to verify that the router booted correctly.**

If the router booted correctly, the new system information appears in the main Site Manager window.

If the router did not boot correctly, system information does not appear. In this case, make sure that you followed the procedures described in this appendix.

If you have any questions, call your local Bay Networks Technical Response Center.

Deleting the Old Configuration File from the Router

Use the Router Files Manager to delete the old configuration file from the router.

1. **Select Tools** > **Router Files Manager.**
2. **Select the old configuration file from the available volumes.**
3. **Select Commands** > **Delete.**

   A confirmation window appears.
4. **Click on OK in the confirmation window.**

Note: If the router uses a memory card, use the Commands > Compact option to compact the memory card.

Renaming the Edited Configuration File to the Default

By default, the file named *config* is the configuration file used to boot the router. Use the Router Files Manager to change the name of your edited configuration file to the default filename and delete the old file.

1. **Select Tools** > **Router Files Manager.**
2. **Select the edited configuration file from the list of files in the Router Files Manager window.**
3. **Select Commands** > **Copy so that you can copy the new configuration file to a file named *config* on the router.**

   A window displays the source filename you selected.
4. **Click on OK in the window.**

   A window prompts you for the name of the copy.
5. **Enter *config* in the window, and then click on OK.**

   A confirmation window appears.
6. **Click on OK in the confirmation window.**
7. **Select the edited configuration file.**

8. **Select Commands** > **Delete to delete your edited configuration file from the router.**

   A confirmation window appears.

9. **Click on Yes in the confirmation window.**

Your edited configuration file has effectively been renamed to the default filename *config*.

Index

A

access privileges, 1-9

adding network interfaces, 2-2

AN, 1-1, 2-1

ASN, 1-1, 2-1, A-1

ATM WAN protocol, 2-5

B

backing up router files, 3-3

Bay Networks
- CompuServe forum, xx
- Customer Service FTP, xix
- home page on World Wide Web, xix
- InfoFACTS service, xxi
- publications, ordering, xvi
- support programs, xviii
- Support Source CD, xx
- Technical Response Center, xvii, xxi
- technical support, xvii

booting with a configuration file, 3-13

bridging/routing protocols
- enabling on a circuit, 2-6

C

circuits
- adding, 2-3
- adding protocols to, 4-2
- assigning additional IP addresses to, 4-8
- deleting from the router, 4-5, A-6
- deleting protocols from, 4-4
- enabling bridging/routing protocols on, 2-6
- enabling WAN services for, 2-5
- moving, 4-6
- naming conventions for, 2-3
- renaming, 4-6
- selecting protocols on, 2-6
- type designators (table), 2-4

compacting memory, A-12

CompuServe, Bay Networks forum on, xx

configuration file
- changing dynamically, 1-7
- copying, A-12
- deleting, A-12
- editing, A-5
- existing, 1-8
- new, 1-9
- opening, A-5
  - dynamic mode, 1-14
  - local mode, 1-8
  - remote mode, 1-12
- overwriting, 3-8
- rebooting a router with, 3-13
- renaming, A-12
- saving, 1-5
  - dynamic mode, 3-6
  - local mode, 3-1
  - remote mode, 3-3
- selecting router model (local), 1-9
- transferring to a router, 3-7

Configuration Manager
- router functions, 1-2
- window, 1-9, 1-11, A-6

console parameters
- Baud Rate, 5-3
- Command Timeout, 5-7
- Data Bits, 5-4

Enable, 5-3
Enable Modem, 5-5
Force Use Logout Enable, 5-8
Lines Per Screen, 5-5
Login Retries, 5-7
Login Timeout, 5-6
Manager Auto Script, 5-7
More Enabled, 5-5
Parity, 5-4
Password Timeout, 5-6
Port Type, 5-3
Prompt, 5-6
Stop Bits, 5-4
User Auto Script, 5-8

copying
configuration file, A-12
router files, A-1 to A-4

Customer Service FTP, xix

customer support. *See* getting help

D

deleting
circuits from the router, 4-5, A-6
configuration file, A-12

directories
privileges for creating a configuration file, 1-9
specifying in the File Selection window, 1-9

dynamic mode, 1-7
saving configuration file in, 3-6
specifying router in, 1-15
starting a configuration, 1-14

E

editing configuration files, A-5

errors
router connection, 1-23
SNMP SET, 1-23

F

File Selection window, 1-8

files
backing up, 3-3
configuration
copying, A-12
deleting, A-12
editing, A-5
opening, A-5
renaming, A-12
copying, A-1 to A-4

Frame Relay, 2-5

G

Get File option, A-4

getting help
from a Bay Networks Technical Response Center, xxi
from the Support Source CD, xx
through CompuServe, xx
through Customer Service FTP, xix
through InfoFACTS service, xxi
through World Wide Web, xix

H

hardware filters
enabling on a circuit, 2-4

hardware specification, 1-9, 1-11

I

InfoFACTS service, xxi

IP addresses
assigning to a circuit, 4-8

L

link module
replacement, A-1
selecting in Module List window, A-7
viewing with Configuration Manager, A-6

local mode, 1-5
saving configuration file in, 3-1
selecting router model in, 1-9
starting a configuration, 1-8 to 1-12
locked message, 1-23

M

memory card
compacting, A-12
Module List window, A-8
moving circuits, 4-6
Multinet, 4-8

N

net module
replacement, A-1
selecting in Module List window, A-7

O

opening configuration file, A-5
operating modes, 1-4

P

parameters
console
Baud Rate, 5-3
Command Timeout, 5-7
Data Bits, 5-4
Enable, 5-3
Enable Modem, 5-5
Force Use Logout Enable, 5-8
Lines Per Screen, 5-5
Login Retries, 5-7
Login Timeout, 5-6
Manager Auto Script, 5-7
More Enabled, 5-5
Parity, 5-4
Password Timeout, 5-6
Port Type, 5-3
Prompt, 5-6
Stop Bits, 5-4
User Auto Script, 5-8
router connection
Identity (Community), 1-17
Node Name/IP address, 1-17
Retries (per request), 1-18
Timeout (seconds), 1-17
system
System Contact, 6-2
System Location, 6-2
System Name, 6-2
PassThru WAN protocol, 2-5
PPP, 2-5
Protocol prioritization
and WAN protocols, 2-5
protocols
adding to a circuit, 4-2
deleting from a circuit, 4-4
Put File option, A-9

R

remote mode, 1-6
saving configuration file in, 3-3
specifying router in, 1-15
starting a configuration, 1-12 to 1-14
renaming
circuits, 4-6
configuration file, A-12
replacement link module or net module, A-1
router connection
error messages, 1-23
parameters
Identity (Community), 1-17
Node Name/IP Address, 1-17
Retries (per request), 1-18
Timeout (seconds), 1-17
Router Files Manager window, A-2
router model
specifying, 1-10

S

saving configuration file
  dynamic mode, 3-6
  local mode, 3-1
  remote mode, 3-3
Select Router Model window, 1-10
SET error, 1-23
SMDS, 2-5
SMNP, 1-23
Standard WAN protocol, 2-5
Support Source CD, xx
synchronous line parameters
  and PPP, 2-5
system
  information
    specifying, 6-1, 6-2
  parameters
    System Contact, 6-2
    System Location, 6-2
    System Name, 6-2

T

Technician Interface
  configuring a connection to, 5-1 to 5-8
TFTP
  using to transfer a config file, 3-7
transferring configuration file, A-4, A-9

W

WAN Protocols, 2-5
World Wide Web, Bay Networks home page on, xix
write-access privileges, 1-9

X

X.25 WAN protocol, 2-5